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Remedial Action Plan/ Response Plan
Former Powerine Refinery
Parcels 8009-022-053, -054, -055, -056, -057, and -058
12345 Lakeland Road, Santa Fe Springs, CA

Prepared on Behalf of:

Goodman Santa Fe Springs SPE LLC

Submitted to:

Regional Water Quality Control Board
Los Angeles Region

Submitted by:

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September 30, 2013
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Reference: Transmittal of Remedial Action Plan/Response Plan, Former Powerine Refinery Parcels 8009-022-053, -054, -055, -056, -057, and -058 12345 Lakeland Road, Santa Fe Springs, CA

On behalf of Goodman Santa Fe Springs SPE LLC (Goodman), Stantec Consulting Services Inc. (Stantec) is submitting this Remedial Action Plan/Response Plan (RAP) for Parcels 8009-022-053, -054, -055, -056, -057, and -058 of the Former Powerine Refinery, 12345 Lakeland Rd., Santa Fe Springs, California, also known as the Eastern Property of the former refinery site. Goodman is under contract to purchase the subject property from Lakeland Development Company and is submitting this RAP pursuant to the California Land Reuse and Revitalization Act (CLRRA).

Please contact the undersigned with questions or comments regarding the submittal.

Regards,

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Stantec

This document entitled Remedial Action Plan/Response Plan, Former Powerine Refinery, Parcels 8009-022-053, -054, -055, -056, -057, and -058, 12345 Lakeland Road, Santa Fe Springs, CA was prepared by Stantec Consulting Services Inc. for Goodman Santa Fe Springs SPE LLC. The material in it reflects Stantec's best judgment in light of the information available to it at the time of preparation. Any use that a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Stantec Consulting Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

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List of Acronyms and Abbreviations

amsl	Above Mean Sea Level
AQMD	Air Quality Management District
AST	Aboveground Storage Tank
BBL	Blasland, Bouck & Lee, Inc.
bgs	Below Ground Surface
BTEX	Benzene, toluene, ethylbenzene, and xylenes
CAO	Cleanup and Abatement Order
CDMG	California Department of Conservation Division of Mines and Geology
CDPH	California Department of Public Health
CERCLA	Comprehensive Environmental Response Compensation & Liability Act
CFR	Code of Federal Regulations
CHHSL	California Human Health Screening Level
CLRRA	California Land Reuse and Revitalization Act
COC	Chemical of Concern
DOGGR	Division of Oil & Gas Resources, State of California
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
EPA	U.S. Environmental Protection Agency
ft	Feet
FPPH	Free Phase Petroleum Hydrocarbon
Goodman	Goodman Santa Fe Springs SPE LLC
GPR	Ground penetrating radar
GPS	Global positioning system
HERO	Human and Ecological Risk Office of DTSC
HHRA	Human Health Risk Assessment
ILCR	Incremental Lifetime Cancer Risk
IT	IT Corporation
LEL	Lower Explosive Limit
MCL	Maximum contaminant level
NPDES	National Pollutant Discharge Elimination System
OCR®	Oxygen Releasing Compound®
O&M	Operation and Maintenance
OPR	Office of Planning and Research
OSWER	Office of Solid Waste and Emergency Response
PAH	Polycyclic Aromatic Hydrocarbons
PID	Photoionization Detector
ppmv	parts per million by volume
PRPs	Potentially Responsible Parties
RAA	Remedial Action Alternative
RAO	Remedial Action Objectives
RAP	Remedial Action Plan

RBCs	Risk-Based Cleanup Goals
RWQCB	Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District
SCRM	Site Conceptual Risk Model
SFS	Santa Fe Springs
SMP	Soil Management Plan
Stantec	Stantec Consulting Services
SVE	Soil vapor extraction
SWPPP	Stormwater Pollution Prevention Plan
TPH	Total Petroleum Hydrocarbons
TPHg	Total Petroleum Hydrocarbons – Gasoline Range Organics
TPHd	Total Petroleum Hydrocarbons – Diesel Range Organics
TPHmo	Total Petroleum Hydrocarbons – Motor Oil Range Organics
TRC	Target Remediation Criteria
UEL	Upper Explosive Limit
USA	Underground Service Alert
VOCs	Volatile Organic Compounds
WDR	Waste discharge requirement

EXECUTIVE SUMMARY

This Remedial Action Plan/Response Plan (RAP) for proposed cleanup activities on the eastern portion of the former Powerine refinery (hereafter referred to as the Eastern Property and/or the "Site") located at 12345 Lakeland Road in Santa Fe Springs, California has been prepared on behalf of Goodman Santa Fe Springs SPE LLC (Goodman). This report was prepared pursuant to the California Land Reuse and Revitalization Act (CLRRA), California Health & Safety Code Section 25395.96.

This RAP prepared by Stantec Consulting Services (Stantec), which addresses the eastern parcels of the former refinery site (i.e., Parcels 8009-022-053, -054, -055, -056, -057, and -058), revises and replaces a previous refinery-wide RAP prepared by Murex (Murex 2013a). A second RAP to be submitted separately by another party will address the western parcels of the former refinery site (i.e., Parcels 8009-22-017, -029, -030, and -031, hereafter referred to as the Western Property). Unless otherwise noted, all of the data and much of the discussions, analysis, and recommendations are taken from the refinery-wide RAP.

Pursuant to California Health and Safety Code Section 25393.96, the public, other agencies, and the host jurisdiction shall have the opportunity to participate in decisions regarding the response action, taking into consideration the nature of the community interest. Thirty days before taking action pursuant to the response plan, the agency shall provide the notifications as set forth in the CLRRA statute.

Site Background and Redevelopment

The Site is approximately 37 acres in size and is bordered to the north by Florence Avenue, to the south by Lakeland Road, and to the east by Bloomfield Avenue. The Site is bordered to the north, east and south by commercial and industrial properties and to the west by the Western Property of the former Powerine Refinery. Both the Site and the Western Property were operated as an oil refinery from the 1930s until July 1995.

Previous refining operations included processing crude oil into several grades of fuel including kerosene, leaded gasoline and aviation fuel, unleaded gasoline, jet fuel, high and low-sulfur diesel, fuel oil, and petroleum coke. Soil and groundwater quality beneath and in proximity to the Site has been impacted by accidental spills. Soil and groundwater investigations, as well as proposed remedial activities have been conducted previously pursuant to a Cleanup and Abatement Order (CAO) No. 97 118 issued by the Regional Water Quality Control Board – Los Angeles Region (RWQCB) to Powerine Oil Company (RWQCB 1997).

The Site is currently owned by Lakeland Development Company. The Western Property is owned by RDX Technologies Corporation. Goodman is in the process of acquiring the Site (Eastern Property) from Lakeland Development Company; the transfer of ownership of the Site is expected to occur in 2013. The Site is zoned as industrial property and will remain a commercial/industrial property into the future. Demolition of former refinery facilities and construction of new commercial properties is planned and these properties are expected to resemble those of redeveloped properties to the east, across Bloomfield Avenue, and to the south, across Lakeland Road.

Site Impacts

A chronology of the identified documented and suspected releases after 1954 can be found in Table I. A map showing areas where historical releases occurred or may have occurred is located on Figure 6. The numbering of historical releases on Figure 6 coordinates with the enumeration of the releases on Table I. Note that Table I and Figure 6 have been revised from the refinery-wide RAP to show only historical releases associated with the Eastern Property, however the release feature sequential numbering is unchanged from the refinery-wide RAP. Therefore, gaps in the sequential numbering are intended.

Impacts on the former refinery property are present as a result of petroleum storage and refining operations. As such, chemicals associated with these releases include total petroleum hydrocarbons (TPH) as various ranges of hydrocarbon weights (i.e., TPH gasoline range organics [TPHg], TPH diesel range organics [TPHd], and TPH motor oil range organics [TPHmo]), aromatic volatile organic compounds (VOCs), such as benzene, toluene, ethylbenzene, and xylenes (BTEX compounds), polycyclic aromatic hydrocarbons (PAHs), such as dibenzo(a,h)anthracene, and petroleum product additives and processing chemicals (including metals and other VOCs). The Site subsurface is divided into the following major horizons for purposes of risk evaluation and remedy selection: (1) shallow soil (0 to 10 feet below ground surface [ft-bgs]); (2) deep soil (10 to approximately 90 to 100 ft-bgs, the approximate depth to groundwater); and (3) groundwater.

The shallow zone extends from ground surface to 10 ft-bgs. Based upon the findings of the baseline human health risk assessment (HHRA) and the HHRA Addendum, chemicals of concern (COCs) in the shallow soil samples include TPHg, TPHd, TPHmo, PAHs, VOCs, and metals. Soil vapor within the shallow soil exhibits BTEX compounds.

The deep soil is considered to be soil extending from 10 ft-bgs to approximately 100 ft-bgs (current depth to water table below the former refinery). COCs in deep soil include TPHg, TPHd, TPHmo, PAHs, and VOCs. In general, the PAHs and VOCs occur in similar locations and depths as the TPH compounds, although not in all areas. Methane is present in deep soil vapor.

Sampling and analysis of groundwater from on-Site wells in the second quarter of 2013 indicates that only benzene was present at a concentration exceeding the target remediation criteria (TRCs) listed on Table II for groundwater (Murex 2013b). Benzene was detected at concentrations exceeding the TRC of 1 microgram per liter (µg/L) in three wells (W-10, 6.3 µg/L; MW-702, 15 µg/L; and MW-706, 5.9 µg/L) (Figure 10). Over the last two quarterly monitoring events, benzene concentrations in samples from those wells have been relatively low (16 µg/L or less). Benzene concentrations in Eastern Property wells generally appear to be declining over time, as do concentrations of the other BTEX constituents (Figure 11) and petroleum compounds.

The TRCs for TPHg and TPHd are the presence of free phase petroleum hydrocarbon (FPPH). No FPPH was observed during the second quarter monitoring event, nor has FPPH been observed for many years in Eastern Property wells.

Site Cleanup Goals

Site cleanup goals are intended to be protective of human health and the environment, and groundwater. The selection of cleanup goals for the Site is based on a human health risk assessment previously conducted for the entire refinery property, and on consideration of potential threat to groundwater from deep soil and actual groundwater conditions. Table II presents the TRCs for soil and groundwater that represent the Site cleanup goals.

To facilitate development, the RWQCB has agreed to allow two phases of cleanup goals. The first will achieve site-specific human health risk-based cleanup goals to protect construction and commercial workers and expedite redevelopment activities, and the second will address protection of groundwater over the longer term. *Remediation Guidance for Petroleum and VOC-Impacted Sites*, Section II, Table 4-1 specifies soil screening levels for TPH and BTEX above drinking water aquifers.

The Site's history of oil production (i.e., the historical presence of oil production wells on the Site) and the presence of high levels of methane in Site soils will require that all buildings constructed on the Site be equipped with engineering controls to mitigate methane seepage and accumulation inside occupied spaces. These controls will have the added benefit of protecting future Site occupants from VOC vapor intrusion, and was an important consideration in the evaluation of human health risk for future receptors.

Identification of Remediation Areas

A number of soil samples collected from the shallow soil zone exhibit TPHg, TPHd, TPHmo, arsenic, lead, benzene, and dibenzo(a,h)anthracene concentrations above the Site human health risk-based Site cleanup goals for shallow soil. Remediation of the upper 10 feet of soil to address these conditions and expedite redevelopment of the property is planned.

In the deep soil, TPHg, TPHd, TPHmo, and VOCs are present above TRCs for the protection of groundwater; however, only benzene occurs in groundwater at levels exceeding the groundwater TRCs specified in Table II (benzene was detected at 15 µg/L or less, relative to the TRC of 1 µg/L during the second quarter 2013 monitoring event). The degree of deep soil contamination in the eastern portion of the former refinery is much less than in the western portion. Historical monitoring trends suggest that groundwater quality beneath the Site is improving over time. The need for remediation of deep soil and groundwater beneath the Site will be evaluated based on continued monitoring of groundwater following development of the property. Contingencies are included in this RAP for deep soil and groundwater remediation if monitoring demonstrates a worsening of groundwater conditions warranting active remedial action.

Proposed Remedial Action Objectives and Remedial Action

Stantec re-evaluated the remedial alternative objectives and alternatives selection considering only the Eastern Property conditions, which exhibit significantly less deep soil and groundwater contamination than is observed on the Western Property. Based on this re-evaluation, the following remedial action objectives are proposed for the Site:

- Mitigate unacceptable risk to humans involved in development and re-use of the property by reducing surface and shallow soil concentrations in the upper 10 feet to below human health risk-based cleanup levels derived for the Site (i.e., the TRCs specified for shallow soil in Table II), and controlling vapor intrusion to buildings through engineering controls.
- Expedite beneficial re-use of the property through redevelopment for commercial/industrial use.
- Protect groundwater from further degradation from Site contaminants.

The proposed remedial action for the Site is:

- Shallow soil - Excavation and off-site disposal
- Deep soil and groundwater – Groundwater monitoring with contingency deep soil and groundwater subsurface remediation infrastructure and planning
- Installation of engineering controls per City of Santa Fe Springs building codes during Site redevelopment to mitigate vapor intrusion into occupied buildings

The proposed remedial action aggressively addresses shallow soil contamination to mitigate human exposure risk while allowing expeditious redevelopment to return the property to beneficial use. It also provides for monitoring of the current downward concentration trends in groundwater while simultaneously providing contingency infrastructure and planning in the event that groundwater conditions worsen and warrant more active groundwater and deep soil remediation.

The proposed remedy is protective of both human health and groundwater and is cost effective given the risks posed by the Site.

Cleanup Approach

The stages of advancement on this project are expected to follow the following general path:

1. Planning, permitting, and regulatory approval process
2. Demolition of remaining facilities (buildings, process facilities, above-ground storage tanks [ASTs], piping, and concrete slabs and footings)
3. Profiling and disposal and/or scrapping of demolition debris
4. Completion of Site characterization (i.e., under-structure sampling, where necessary)
5. Shallow soil excavation, management, profiling, and disposal
6. Site restoration and mass grading
7. Entitlements and redevelopment approvals
8. Installation of deep soil and groundwater subsurface remediation and monitoring infrastructure, as appropriate
9. Development construction
10. Groundwater monitoring and contingent active deep soil and /or groundwater remediation, as warranted

Variance

As conditions in the field may vary, it may become necessary to implement variances when performing the proposed activities as presented in this RAP. Field personnel will notify the project manager when deviations from this RAP are necessary. The RWQCB will be notified of significant variances immediately, and a verbal or written approval will be obtained from the RWQCB before implementing the modifications, where possible. Variances to the approved RAP will be documented in writing.

Schedule

The conceptual schedule for the implementation of the RAP is shown in Figure 25. The schedule will depend on the schedule for Site redevelopment and may change significantly. In particular, the dates shown on the schedule should be considered conceptual and for illustrative purposes only at this time. The schedule will be revised as development plans are finalized.

Five acres in the southwest portion of the Eastern Property are subject to a purchase agreement lease back provision through June 30, 2015. The actual end of the lease back period will depend on the lessee needs and may occur sooner. Goodman intends to complete shallow soil closure in time to initiate building construction by January 2015, and the schedule reflects this intention by

showing shallow soil remediation as one effort in time. If a separate shallow soil remediation effort is later determined to be necessary for the five acre lease back area, the schedule will be revised and the RWQCB will be informed.

1.0 INTRODUCTION

This RAP for proposed cleanup activities for Parcels 8009-022-053, -054, -055, -056, -057, and -058 at the former Powerine refinery located at 12345 Lakeland Road in Santa Fe Springs, California (Figure 1) has been prepared on behalf of Goodman Santa Fe Springs SPE LLC. This report was prepared pursuant to the California Land Reuse and Revitalization Act, California Health & Safety Code Section 25395.96 (CLRRA 2004).

This document provides background on the Site, summarizes the findings of historical investigations and risk assessment, presents Site cleanup goals, evaluates remedial alternatives, and provides an implementation plan for the completion of the selected remedial alternative.

The RWQCB requested the preparation of a RAP that would select a remedial alternative for Site soil and groundwater, describe implementation measures, and propose a schedule for completion of Site cleanup. Property owner/operator representatives, Murex, and the RWQCB met on November 17, 2011 to discuss specific details of the requested RAP, including the selection of Site cleanup goals. Between October 2011 and August 2012, Murex met with the California Department of Toxic Substances Control (DTSC) and the RWQCB and submitted technical documents in support of the selection of Site cleanup goals for shallow soil, deep soil, and groundwater. These documents and the selected cleanup goals are discussed further in Section 4.0.

Goodman has also met with the RWQCB to discuss the intended development, application of the CLRRA process to the Site, the revision of the RAP to address the Site only, and proposed remediation methodologies called for in the RAP.

1.1 Purpose of RAP and Limitations

Previous investigations have identified chemical impacts in former refinery property soil and groundwater, including TPH (TPHg, TPHd, and TPHmo), VOCs, PAHs, and metals such as lead and arsenic. This RAP summarizes Site chemical impacts, identifies where impacts exceed Site cleanup goals, selects a remedial alternative, and presents an implementation plan for initiating the selected remedial alternative.

The RAP is not intended to address off-site groundwater impacts resultant from releases from the former refinery. The off-Site groundwater plume is still being studied, exhibits evidence of contribution from other parties, and may require additional characterization before remedies can

be evaluated. This RAP is also not intended to address soil or groundwater impacts on the Western Property of the former refinery. The Western Property will be the subject of a separate RAP being prepared by the owner of that property.

This document is not intended to provide a complete engineering design and should not be used for purposes of acquiring construction permits, performing estimation take-offs, or for preparing final cost estimates. Subsequent to the approval of this document by the RWQCB and finalization of development plans, a formal engineering design will be prepared in order to gain permits, secure contractor bids, and plan for the safe and complete implementation of the proposed remedy.

This RAP prepared by Stantec, which addresses the eastern parcels of the former refinery site (i.e., Parcels 8009-022-053, -054, -055, -056, -057, and -058), revises and replaces a previous refinery-wide RAP prepared by Murex (Murex 2013a). A second RAP to be submitted separately by another party will address the western parcels of the former refinery site (i.e., Parcels 8009-22-017, -029, -030, and -031). Unless otherwise noted, all of the data and much of the discussions, analysis, and recommendations are taken from the refinery-wide RAP.

Pursuant to California Health and Safety Code Section 25393.96, the public, other agencies, and the host jurisdiction shall have the opportunity to participate in decisions regarding the response action, taking into consideration the nature of the community interest. Thirty days before taking action pursuant to the response plan, the agency shall provide the notifications as set forth in the CLRRA statute.

1.2 Report Organization

The following sections of the RAP are organized as follows:

- **Section 2, Site Background:** This section describes the Site, its historical petroleum refining operations, and regional and local geology and hydrogeology.

- **Section 3, Nature and Extent of Subsurface Impacts:** This section provides an overview of the environmental assessments conducted at the Site and characterizes the type and degree of impacts to soil and groundwater.

- **Section 4, Summary of Risk Evaluation and Site Cleanup Criteria:** This section presents the cleanup goals developed through discussions with the DTSC and RWQCB.

- **Section 5, Identification of Impacted Areas Above Cleanup Criteria:** Section 5 discusses contamination in Site shallow soil (0-10 feet), deep soil (10 feet to groundwater), and groundwater.

- **Section 6, Remedial Action Objectives and Alternatives Selection:** This section specifies the remedial action objectives for soil and groundwater at the Site and discusses evaluation and selection of the proposed remedial alternatives for shallow soil, and deep soil and groundwater.

- **Section 7, Proposed Remedial Alternative and Recommended Design Parameters:** Section 7 describes the selected remedial alternatives.

- **Section 8, Implementation Plan:** This section develops a general site-wide approach for implementation of the RAP. Included in this section are implementation plans for additional investigation of soil beneath demolished structures, excavation of shallow soil, installation of contingent deep soil and groundwater remedy infrastructure, redevelopment, and ongoing monitoring of deep soil and groundwater.

- **Section 9, Schedule:** Section 9 presents a conceptual schedule for RAP implementation.

2.0 SITE BACKGROUND

2.1 Site Location and General Description

The Site is approximately 37 acres in size and is bordered to the north by Florence Avenue, to the south by Lakeland Road, and to the east by Bloomfield Avenue. The Site is bordered to the north, east and south by commercial and industrial properties, and to the west by the Western Property of the former Powerine Refinery. The Site is made up of six parcels, 8009-022-053, -054, -055, -056, -057, and -058, within the City of Santa Fe Springs, Los Angeles County, California. Figure 2 shows the parcel line divisions (parcel lines shown in blue).

The Eastern Property and Western Property together were operated as an oil refinery from the 1930s until July 1995 (Murex 2013a). Oil-production-related structures such as ponds and aboveground holding tanks may have also been located on site during these years (Haley & Aldrich, 2005). The refinery ceased operations in July 1995. Since then, refinery structures, such as tanks, overhead piping, and other infrastructure, have been removed in stages. The remaining refinery structures on the Site are scheduled to be removed or demolished prior to the redevelopment of the Site for commercial/industrial use. Figure 2 shows an aerial photo of the Site in its recent condition.

Soil and groundwater quality beneath and in proximity to the Site have been impacted by accidental spills associated with former refinery operations. Soil and groundwater investigations have been conducted pursuant to a CAO No. 97-118 issued by the RWQCB (RWQCB 1997) to Powerine Oil Company (CENCO Refining Company) in 1997 (Haley & Aldrich, 2005). A summary of previous Site investigations is presented below in Section 3.0.

2.2 History of Site Uses

The former refinery was historically operated by various entities, including the Bell View Oil Syndicate, Rothschild Oil Company, Powerine, Mr. Oscar Schmidt, Castle Energy Corporation, Energy Merchant Corporation, and CENCO. Information regarding Site ownership and on-Site operations was obtained from the January 28, 2000 *Revised Master Work Plan*, prepared by Versar, Inc. (Versar, 2000).

Previous refining operations included processing crude oil into several grades of fuel including kerosene, leaded gasoline and aviation fuel, unleaded gasoline, jet fuel, high and low sulfur diesel, fuel oil, and petroleum coke. The refinery also produced non-fuel byproducts for sale, including sulfur and carbon dioxide. Additionally, the refinery produced refinery gas and hydrogen for internal refinery consumption.

A review of aerial photographs dated 1928 and 1938 indicates that the western portion of the former refinery may have historically been used for agricultural purposes. Prior to construction of the refinery, the Powerine Refinery site was an oil field consisting of crude oil production wells and unlined sumps. In 1936, Rothschild Oil Company purchased the refinery from the Bell View Oil Syndicate (Murex 2013a).

The Rothschild Oil Company owned and operated the Powerine Refinery from 1936 to 1984, when Powerine went into bankruptcy and ceased operations. In 1986, the refinery emerged from bankruptcy under new ownership by Mr. Oscar Schmidt. Mr. Schmidt restarted the refinery and continued operations until 1992, when it was shut down again due to financial hardships. In 1993, the Castle Energy Corporation purchased Powerine and operated the refinery until 1995, when refinery operations were suspended. In 1996, Energy Merchant Corporation purchased Powerine. In August 1998, CENCO purchased the assets and liabilities of Powerine.

The former refinery had three main operational areas identified as the East Tank Farm, the Processing Area, and the West Tank Farm. The East Tank Farm was located in the southeastern portion of the former refinery. This area contained several ASTs and a storm water impoundment basin in the southeast corner of the refinery. The ASTs were used to store various petroleum products, including crude oil, gasoline, jet fuel and intermediate refined products, propane, isobutylene, and butane. The Processing Area was located in the central and northern portions of the refinery (corresponding with the western and northern portions of the Site). The Processing Area contained an administration building, a maintenance office, a laboratory, and processing equipment including crude units, a fluid catalytic cracking unit, an alkylation unit, a coker unit, a sulfur plant, a hydrogen plant, a hydrocracker, various hydrotreating units, and a gasoline blending facility. The West Tank Farm was located along the western boundary of the Western Property and contained several ASTs. The ASTs were used to store wastewater, vacuum residuum, gas oil, and other fuel products. Also, connections in at least three locations link the former Powerine refinery storage infrastructure with the regional network of petroleum transmission pipelines.

2.3 Current Site Use

The Site is currently owned by Lakeland Development Company. The Western Property is owned by RDX Technologies Corporation. Goodman is in the process of separately acquiring the Eastern Property from Lakeland Development Company; the transfer of ownership of the Eastern Property is expected to occur in 2013.

2.4 Future Site Use and Redevelopment

The Site is zoned as industrial property and will remain a commercial/industrial property into the future. Demolition of former refinery infrastructure and construction of new commercial properties is planned. These redeveloped properties are expected to resemble those of redeveloped properties to the east, across Bloomfield Avenue, and to the south, across Lakeland Road. These redeveloped neighboring properties house large multi-acre shipping and distribution warehouse buildings. Approximately 90% to 95% of the redeveloped property will be covered by buildings or asphalt parking and driveways. The only future long-term occupants of the Site will be commercial workers.

Five acres in the southeastern portion of the Eastern Property (Figure 2) are subject in the property purchase agreement to a lease back provision to the current property owner (future lessee) that extends to June 30, 2015. The actual length of the lease back period will be determined based on the needs of the lessee and may end sooner than June 30, 2015. Demolition of certain structures currently located on the lease back area may be deferred through the lease back period. Supplemental investigations and shallow soil remediation in this lease back area may also be deferred as a result.

2.5 Geology and Hydrogeology

2.5.1 Regional

The Site is located within the Santa Fe Springs Plain Subgeomorphic Province of the Los Angeles Coastal Plain at an elevation of approximately 130 to 140 feet above mean sea level (ft-amsl). This plain is a slightly rolling topographic feature sloping gently to the northeast in the vicinity of the Site due to the northwest trending Santa Fe Springs–Coyote Hills anticlinal system. The Site is positioned above the southern limb of the Santa Fe Springs Anticline. Petroleum accumulation associated with this anticlinal structure has resulted in substantial oil production in the Santa Fe Springs area. Prominent topographic features in the area include the Puente and Coyote Hills to the northeast, east, and southeast. The San Gabriel River is located approximately 1.75 miles west of the Site and flows from north-northeast to south-southwest (Haley & Aldrich, 2005; Versar, 2000).

The Los Angeles Coastal Plain area is a large structural basin that has accumulated thousands of feet of sediments since Miocene time and has been tectonically active. The Los Angeles Coastal Plain generally consists of alluvial materials deposited by the Los Angeles, San Gabriel, and Santa Ana Rivers. The Santa Fe Springs Plain is comprised of the Upper Pleistocene–age Lakewood Formation (California Division of Mines and Geology, 1999). The Lakewood Formation and the underlying San Pedro Formation are folded over the anticlinal dome structure (Haley & Aldrich, 2005; Versar, 2000).

Several regional water-bearing units have been identified within the older alluvial fan and valley deposits of the Lakewood Formation and underlying San Pedro Formation. In the Site area, the Lakewood Formation begins at ground surface, ranges from 100 to 180 feet thick, and is composed of three hydrostratigraphic units: 1) the Bellflower Aquiclude (upper unit), 2) the Exposition Aquifer, and 3) the Gage Aquifer. The Exposition and Gage aquifers consist predominantly of sands and fine gravels with discontinuous, thinly bedded silts and clays. These aquifers have an approximate combined thickness of 100 to 150 feet, approximately half of which is saturated (Versar, 2000).

Within the Site vicinity, the Bellflower Aquiclude consists of a heterogeneous mixture of clays, silty clays, silts, and extensive interbedded lenses of sandy or gravelly silts and clays and has an estimated thickness between 20 and 40 feet. The major water-bearing unit of interest for this investigation is the Exposition Aquifer (otherwise known as the Artesia Aquifer), the upper water bearing unit of the Lakewood Formation. The Exposition Aquifer is composed of coarse gravel, coarse to fine sand, and interbedded silts and clays with a general southwesterly dip and thickness between 40 and 80 feet. The Exposition Aquifer is separated from the Gage Aquifer by an unnamed aquiclude.

Information for the Site area in Santa Fe Springs indicates that the depth to first-encountered groundwater within the Exposition Aquifer ranges from 75 to 100 ft-bgs. The Gage Aquifer consists predominantly of sands and fine gravels with an estimated thickness between 30 and 60 feet (Department of Water Resources [DWR], 1961; Versar, 2000; Haley & Aldrich, 2005).

2.5.2 Local

In the Site vicinity, the Santa Fe Springs Plain consists of the late Pleistocene alluvium of the Lakewood Formation. The Lakewood Formation unconformably overlies the lower Pleistocene San Pedro Formation and the Pliocene Pico Formation. The Lakewood Formation consists of interbedded clays, silts, silty sands, and sands representative of stream-type alluvial and floodplain deposits (Versar, 2000). Previous subsurface investigations conducted at the Site confirm that the lithology is a vertically and laterally heterogeneous mélange of such alluvial deposits (Haley & Aldrich, 2005, Blasland, Bouck & Lee, Inc. [BBL], 2006; ARCADIS, 2009b).

The underlying materials consist of interbedded alluvial sediments ranging in texture from poorly graded sands through fat clays. Figure 3 shows two cross-section cut lines; A-A' and B-B' and Figures 4 and 5 depict the corresponding geologic cross-sections.

Based on recent groundwater level measurements, first-encountered groundwater beneath the Site vicinity ranges in elevation from approximately 35 to 50 ft-amsl. The average horizontal groundwater gradient is approximately 0.008 foot per foot (ft/ft). The groundwater flow direction originates from the northeast and turns south across the Site (Figure 10). This direction and gradient are consistent with historical measurements.

Aquifer testing performed at the former refinery by IT Corporation (IT, 1986) resulted in calculated groundwater transmissivities between 124 and 13,613 gallons per day per foot. IT interpreted the results as an indication of a highly heterogeneous water-bearing zone containing significant boundary effects. However, the aquifer materials encountered between approximately 90 and 130 ft-bgs during recent installations of groundwater monitoring wells were generally uniform across the saturated zone, and composed of medium to fine silty sand (Murex, 2011a).

Selected samples of aquifer soils were subjected to geophysical testing during the 2008 supplemental site characterization event and again in 2011 during the pilot test. Using these values, groundwater seepage flux was calculated as shown in the table below (Murex 2013a):

Sample Location	Sample Depth (ft-bgs)	K(vert) (cm/sec)	K(horiz) (cm/sec)[1]	Gradient[2] (ft/ft)	Porosity	Darcy Flux (ft/day)	Linear GW Velocity (ft/day)
B-232	90	0.00043	0.0043	0.008	0.3	0.10	0.32
MP-11	100	0.00091	0.0091	0.008	0.3	0.21	0.69
MP-11	120	0.00076	0.0076	0.008	0.3	0.17	0.57
						Average Groundwater Flux Per Year (ft)	**193**

Notes:

1. Horizontal hydraulic conductivity is assumed to be 10 times the laboratory value for vertical hydraulic conductivity, based on soil type.
2. Average hydrogeologic gradient across the Site over period 2009-2012 is 0.008 ft/ft.
3. K(vert) = vertical hydraulic conductivity; K(horiz) = horizontal hydraulic conductivity.

The calculated linear groundwater velocity represents the distanced covered in one year by groundwater. Contaminants in groundwater are often slowed by soil- and chemical-specific properties, and therefore move down gradient at lower velocities than the water itself.

2.6 Municipal Supply Wells

Local public and municipal production wells were researched by Haley & Aldrich (2005). According to DWR (2001), two municipal supply wells are operated within and by the City of Santa Fe Springs at locations further than 1 mile from the Site:

- Well 03S/11W-20R09S, located approximately 3.7 miles south-southeast of the Site, generated approximately 1,526 acre-ft of groundwater from July 1, 2000, through June 30, 2001.

- Well 02S/11W-30R03S, located approximately 2.9 miles north of the Site, generated approximately 1,878 acre-ft of groundwater during that same period

3.0 NATURE AND EXTENT OF SITE IMPACTS

3.1 Identification of Source Areas

Murex gathered historical operations records, historical incident reports, conferred with long-term employees of the former refinery and compared this information to soil characterization data. A chronology of the identified releases after 1954 can be found in Table I (prior to 1954, records were not available). A map showing areas where historical releases occurred or may have occurred is located on Figure 6. The numbering of historical releases on Figure 6 coordinates with the enumeration of the releases on Table I. Note that Table I and Figure 6 have been revised from the original facility-wide RAP (Murex 2013a) to show only historical releases associated with the Eastern Property, however the release feature sequential numbering is unchanged from the facility-wide RAP. Therefore, gaps in the sequential numbering are intended.

Twelve documented releases (those recorded in incident reports or described by witnesses) and five additional impacted areas are detailed for the Site in Table I. Of the twelve documented releases, five exhibit elevated concentrations of COCs and will require shallow soil remediation, while the other seven have been investigated and were found to exhibit low concentrations of COCs.

The additional impact areas are not described in any documented reports of an accident or release but have been investigated, the extent of contamination has been delineated, and those that exhibit concentrations of COCs above the cleanup goals will be addressed.

3.1.1 Potential Offsite Sources

Versar (1997) identified at least eight potentially responsible parties (PRPs) that have been responsible for major contributions of COCs, primarily chlorinated VOCs, to regional groundwater. Versar (2000) also indicated that “research conducted by CENCO suggests that there may be as many as 100 PRPs contributing to the presence of VOCs in groundwater on a regional scale.” The most significant contributor is believed to be the Omega Chemical Superfund Site, which exhibits a groundwater plume that has reached and surpassed the former Powerine site headed in a southerly flow pattern (Murex 2013a). Currently, detections of chlorinated solvents are common in wells located on and off the former Powerine refinery.

3.2 Summary of Previous Site Investigations

3.2.1 Previous Investigations – Site Soil

The first systematic and site-wide soil and soil gas investigation was conducted over the entire former refinery property by BBL in 2006; they conducted a soil investigation between November 8,

2005, and February 8, 2006, in accordance with the *Additional Site Investigation Work Plan* (Haley & Aldrich, 2005) as approved by the RWQCB. The BBL investigation focused primarily on soil from ground surface to approximately 20 ft-bgs. Although other historical investigations were conducted prior to that (IT, 1985; Versar, 2000), the BBL investigation consisted of collecting sample data from a total of 220 soil borings evenly distributed (100 by 100 foot grid) across the entire former refinery property. In addition, an active soil-gas survey was conducted at 221 locations across the former refinery property. Soil gas samples were collected and analyzed using semi-permanent soil-gas probes at depths of 5 and 10 ft-bgs.

In 2009, ARCADIS performed an additional soil investigation at the former refinery property in accordance with the RWQCB-approved work plan titled *Supplemental Soil Investigation Workplan* (ARCADIS, 2007) to address data gaps identified in the 2006 investigation. The soil investigation was performed in three subsurface zones at the Site: (1) ground surface to approximately 2 ft-bgs, (2) 2 to approximately 20 ft-bgs, and (3) 20 to approximately 90 ft-bgs, the approximate depth to groundwater at that time.

The surface and shallow soil investigations focused on addressing data gaps. Deep soil was investigated primarily to target areas with known historical petroleum hydrocarbon releases. Soil samples were also gathered under former structures that had already been demolished, (i.e., former petroleum product holding tanks) to a depth of approximately 40 ft-bgs.

The results of the soil and soil gas sampling activities are summarized in the following documents:

- *Additional Site Investigation Report*, (BBL, 2006).
- *Supplemental Soil Investigation Report*, (ARCADIS, 2009b).

These results were also compiled and used to complete the HHRA (ARCADIS, 2009c), which is discussed further in Section 4.0.

The most recent soil investigation at the former refinery occurred in 2011 by Murex, which took place as a part of the implementation of the *Pilot Testing Workplan* (Murex, 2010). Soil samples were collected from borings during the installation of the bioventing and vapor monitoring wells to provide information on the physical characteristics of and chemical concentrations in the soil in the pilot test areas, located at the northwest corner of the East Tank farm and the north central region of the former refinery adjacent to Florence Avenue. Samples from the soil borings were taken between 15 and 125 ft-bgs. Samples were analyzed for VOCs, PAHs, and TPH, and select samples (dependent upon soil recovery) were also tested for physical parameters such as grain size, air permeability, moisture content and fraction of organic content.

As a second phase of the pilot test, shallow soil borings were advanced to further characterize soil impacts in the shallow zone (0-10 ft-bgs); specifically, this phase of the test was designed to develop a statistical model for predicting the accuracy of soil excavation volume estimates. A total of 30 locations were sampled at 1, 3, 6, and 9 ft-bgs. The samples were collected using a direct-push, Geoprobe drill rig and analyzed for TPH, VOCs, and SVOCs.

A select subset of some of the more contaminated samples (i.e., based odor and appearance) was also analyzed for Title 22 metals to pre-characterize soil for disposal purposes that would likely be excavated later. The results of the soil sampling and pilot test activities are summarized in *Pilot Testing Report* (Murex, 2011c).

Murex (2013a) concluded that a significant portion of the TPHg, TPHd, and TPHmo data reported in the BBL/ARCADIS investigation reports from 2006 and 2009 (BBL, 2006; and ARCADIS, 2009b) were cumulative additions of the actual laboratory results, which were reported as individual carbon chain ranges, such as C9-C10, C11-C12, etc. The ranges selected by ARCADIS for these summations differed slightly from the laboratory-reported carbon ranges; both result sets differed again from TPHd and TPHmo ranges reported by Murex's laboratory (Sunstar Labs). Murex elected to use the RWQCB carbon-chain ranges identified in the RWQCB's *Remediation Guidance for Petroleum and VOC-Impacted Sites*, Section II (RWQCB 1996). In that publication, TPHg is identified as carbon weight ranges C4-C12; TPHd is identified as C13-C22; and TPHmo is identified as C23-C32. Where possible, Murex used the reported data that most closely matched the RWQCB carbon ranges for each petroleum species. Where the ranges differed, Murex selected the higher result of the individual species result or the summed carbon range result.

3.2.2 Previous Investigations – Site Groundwater

Groundwater monitoring has occurred at the former refinery since August 1986 and continues presently on a quarterly basis. The most recent second quarter 2013 monitoring event took place in March and April 2013. Fifty-nine wells now make up the Powerine groundwater monitoring program, of which as many as twenty are currently dry, due to the decline in groundwater elevations that has occurred over the last twenty years. The locations of the groundwater monitoring wells on the Site are shown on Figure 10. Samples gathered during the quarterly monitoring events are analyzed for TPHg and VOCs by modified EPA method 8015.

In 2010, the RWQCB directed Lakeland to plan for and install new monitoring wells sufficient to replace those that had gone dry, and to characterize FPPH beneath the former refinery property

and in the vicinity. Murex submitted work plans to install fifteen new monitoring wells and to complete the FPPH investigation that had been begun by ARCADIS in 2009. The findings of the investigation activities proposed therein were summarized in the following documents:

- Groundwater Investigation Report and First Quarter 2011 Groundwater Monitoring Report, Former CENCO Refinery, 12345 Lakeland Road, Santa Fe Springs, California, March 23, 2011 (Murex, 2011a)
- Free Phase Petroleum Hydrocarbon Investigation Report, Former CENCO Refinery, 12345 Lakeland Road, Santa Fe Springs, California, June 30, 2011 (Murex, 2011b).
- Addendum to the Free-Phase Petroleum Hydrocarbon Investigation Report, Former CENCO Refinery, 12345 Lakeland Road, Santa Fe Springs, California, January 25, 2012 (Murex, 2012a).

In general, the footprint of impacted groundwater within former refinery property has decreased over time. FPPH, once prevalent in certain refinery wells, is now observed occasionally only in a well located in the Western Property. FPPHs have not been documented in Eastern Property wells for many years.

Murex concluded that intrinsic biodegradation continues to be viable in at least some areas of the Site and vicinity. The main limiting factor is oxygen, which, if introduced mechanically to groundwater, could spur significant reduction in contamination through biodegradation (Murex, 2013a).

3.3 Summary of Subsurface Site Impacts

As discussed, COCs at the former refinery are present as a result of petroleum storage and refining operations. As such, these chemicals include TPH as various ranges of hydrocarbon weights (i.e., TPHg, TPHd, and TPHmo), aromatic VOCs such as BTEX compounds, PAHs, and petroleum product additives and processing chemicals (including metals and other VOCs) (Murex, 2013a). As described above, the Site subsurface is divided into the following major horizons for purposes of risk evaluation and remedy selection: (1) shallow soil (0 to 10 ft-bgs); (2) deep soil (10 to approximately 90 to 100 ft-bgs, the approximate depth to groundwater); and (3) groundwater.

3.3.1 Shallow Soil (0-10 ft)

The shallow zone extends from ground surface to 10 ft-bgs. Based upon the findings of the HHRA and the HHRA Addendum, COCs in the surface soil samples include TPHg, TPHd, TPHmo, PAHs, VOCs, and metals (Murex, 2013a). Detailed maps indicating the extent of impact for each

of the COCs are presented in the August 2006 Additional Site Investigation Report by BBL (BBL, 2006).

3.3.2 Deep Soil (10-100 ft)

The deep soil is considered to be soil extending from 10 ft-bgs to approximately 100 ft-bgs (current depth to water table below the Site). COCs in deep soil on-Site include TPHg, TPHd, TPHmo, PAHs, and VOCs (Murex, 2013a). In general, the PAHs and VOCs occur in similar locations and depths as the TPH compound detections, although not in all areas.

The distribution of petroleum-related COCs changes with depth, resulting from their varying properties. For instance, PAHs decrease significantly with depth due to their low mobility in the environment. Conversely, gasoline and BTEX compounds are found deeper in the vadose zone (Murex, 2013a).

Methane is present in deep soil vapor (Murex, 2013a).

Figures 8 and 9 (derived from Murex, 2013a) depict three dimensional isometric views of total TPH and total VOCs from 0 to 100 ft-bgs across the Site. The most significant impacts are apparent in the Western Property. In general, the soil impacts are significantly less on the Eastern Property.

3.3.3 On-Site Groundwater

Sampling and analysis of groundwater from Site wells in the second quarter of 2013 (Murex, 2013b) indicates that only benzene was detected at a concentration exceeding the TRCs listed on Table II for groundwater. Benzene was detected at concentrations exceeding the TRC of 1 µg/L in three wells (W-10, 6.3 µg/L; MW-702, 15 µg/L; and MW-706, 5.9 µg/L) (Figure 10). Over the last two quarterly monitoring events, benzene concentrations in samples from those wells have been relatively low (16 µg/L or less). Benzene concentrations in Site wells generally appear to be declining over time, as do concentrations of the other BTEX constituents (Figure 11) and petroleum compounds.

The TRCs for TPHg and TPHd are the presence of FPPH. No FPPH TPHg or TPHd was observed during the second quarter 2013 monitoring event, nor has FPPH been observed for many years in Site wells.

4.0 SUMMARY OF RISK EVALUTION AND SITE CLEANUP CRITERIA

The evaluation of Site risk addresses both human health risk and groundwater protection. The following discussion is taken from Murex, 2013a.

Although the RWQCB is the lead agency, the DTSC has historically contributed to the regulatory oversight by evaluating human health-related studies. As part of the CLRRA process, it is anticipated that the RWQCB will be designated as the lead agency.

4.1 Human Health Evaluation

4.1.1 Site Conceptual Risk Model

A site conceptual risk model (SCRM) describes the relationship between chemical sources, migration pathways, exposure routes, and possible exposure pathways for hypothetical human receptors potentially present on and near the Site under current and future use scenarios. It is necessary to construct a SCRM and define potentially complete exposure pathways for hypothetical current and future receptors at the Site in order to evaluate whether mitigation is necessary for a given hypothetical risk. Figure 12 (derived from Murex, 2013a) presents the SCRM for the entire refinery property showing all the potential exposure pathways relevant to the Site. The SCRM was included in the human health studies discussed below and approved by the DTSC in May 2012.

As shown, the potential human receptors evaluated under the current scenario were the on-site commercial/industrial worker and the off-site resident. Under the future use scenario, the on-site construction worker, the on-site utility or trench worker, and the on-site commercial worker were included for evaluation.

4.1.2 Summary of Human Health Risk Evaluation

ARCADIS completed a baseline HHRA for the former refinery in 2009 (ARCADIS, 2009c). The baseline HHRA evaluated potential on-Site and off-Site human health under current and anticipated future conditions in accordance with the RWQCB-approved work plan (ARCADIS 2007) predicated on standard DTSC and USEPA risk assessment guidelines. This work plan was approved by the RWQCB on January 11, 2008 and the HHRA was submitted by ARCADIS in September 2009.

DTSC provided comments summarizing the results of their review of the HHRA in January 2011. Murex formally responded to the DTSC comments in a letter dated April 15, 2011. During an April 12, 2011 teleconference between Murex staff and the DTSC and the Human and Ecological Risk Office (HERO) staff, the responses were discussed, and an approach for the presentation of an

HHRA Addendum was agreed upon. The HHRA Addendum (Murex, 2010) was submitted to the DTSC/HERO and the RWQCB on August 22, 2010 and was conditionally approved with comments that were to be addressed in this RAP, discussed further below.

4.1.3 DTSC-Requested RAP Considerations

Murex and Lakeland representatives met with the RWQCB and DTSC case managers and the HERO toxicologist on February 28, 2012 to discuss the HHRA Addendum approval and the remaining DTSC comments on the HHRA/HHRA Addendum. The DTSC agreed that the remaining comments could be addressed in the RAP. These remaining comments are discussed below, as presented in the refinery-wide RAP (Murex, 2013a).

Inclusion of VOCs as COCs for indoor air risks to future commercial/industrial workers: These must be addressed in the upcoming remedial action; once included, the use of vapor barriers and passive venting systems, as required by City of Santa Fe Springs, would adequately address this concern and the pathway would be considered incomplete.

The HHRA Addendum did, in fact, address VOCs as contaminants of concern for indoor air risk to future commercial/industrial workers in Section 2.1.2. The calculated values were listed in HHRA Addendum in Table 9. Going forward, however, the vapor intrusion risk drops out of the remedial action planning analysis, because all buildings constructed on the Site are required by City of Santa Fe Springs regulations to be equipped with appropriate vapor mitigation engineering controls (an evaluation of methane risk is discussed further in section 4.3). Therefore, as shown on the SCRM (Figure 12), the vapor intrusion pathway is incomplete and remedial goals need not consider that exposure route.

Evaluation of lead risk: Lead should be considered a COC and evaluated for remedial action where its 95% UCL exceeds the CHHSL of 320 milligrams per kilogram (mg/kg).

Murex reviewed Site data for lead and found that the higher concentration samples occurred mainly in the shallow soil (less than 2 ft-bgs). In addition, several of these samples occur within areas of high TPH contamination and are likely areas for direct removal. Therefore, several of the highest lead contaminated sample locations were selected for removal, and extracted from the 95% UCL calculations. By directly addressing the highest lead contamination, the 95% UCL values decreased to less than the California Human Health Screening Level (CHHSL) of 320 mg/kg. Supporting calculations are included as Appendix A1.

4.1.4 Development of RBCs

Site-specific risk-based cleanup goals (RBCs) were derived for individual COCs that exceeded an incremental lifetime cancer risk (ILCR) of 1×10^{-6} in the Addendum to the Baseline Human Health Risk Assessment (HHRA Addendum), Table 8 (Murex, 2010). All soil non-cancer hazard indices were below the acceptable ceiling HI of 1, so RBCs were not calculated for the non-cancer endpoint. The nine COCs for which RBCs were derived in the HHRA addendum are:

- Aldrin
- Arsenic
- Benzene
- Benzo(a)pyrene
- Chlordane
- Dibenzo(a,h)anthracene
- Lead
- PCB-1254
- 1,2,3-Trichloropropane

The RBCs were calculated in the HHRA Addendum using the standard pathway-specific equations, DTSC default exposure parameters, and a target risk of 1×10^{-6}.

Because DTSC manages commercial/industrial properties at an acceptable ILCR of 1×10^{-5}, the HHRA Addendum risk characterization results for soil pathways were reviewed by Murex to identify the specific Site areas for which the ILCR exceeded 1×10^{-5}. Four risk exposure areas were evaluated, of which Areas 1 and 2 lie entirely within the Site, and Areas 3 and 4 lie only partially within the Site (Figure 2). Of the four exposure areas, Areas 1 and 4 did not have ILCRs exceeding 1×10^{-5}, but Areas 2 and 3 did (Murex, 2013a). For Area 2, benzene contributes to the majority of the ILCR and, if the exposure concentration used in the HHRA Addendum is replaced with the site-specific RBC of 4.0 mg/kg, the total ILCR is reduced to below 1×10^{-5}. Accordingly, benzene is the “risk driver” for soil in Area 2 and the only soil COC requiring remediation to address human health risk in that area. For Area 3, dibenzo(a,h)anthracene contributes to the majority of the ILCR and, if the exposure concentration used in the HHRA Addendum is replaced with the site-specific RBC of 0.6 mg/kg, the total ILCR is reduced to below 1×10^{-5}. Accordingly, dibenzo(a,h)anthracene is the “risk driver” for soil in Area 3 and the only soil COC requiring remediation to address human health risk in that area.

Therefore, according to the findings of the HHRA and the HHRA Addendum, certain compounds present in shallow soil exceed acceptable human health limits. These levels are listed in the table below (Murex 2013a):

Chemical	Limit	Applicable to Area
Arsenic	13 mg/kg	Site-wide
Benzene	4 mg/kg	Area 2
Dibenzo(a,h)anthracene	0.6 mg/kg	Area 3
Lead	320 mg/kg*	Site-wide

**Remediation of lead-impacted soil is necessary where the 95% UCL of a given risk area exceeds the CHHSL of 320 mg/kg; however, individual samples exceeding 320 mg/kg may be acceptable to be left in place. A discussion of the 95% Pro UCL analysis for lead can be found in Appendix A1.*

4.2 Groundwater Protection Evaluation

4.2.1 Site Soil – Phase One (Shallow Soil)

In the vadose zone at certain locations within the Site, TPH and other petroleum constituents are present in soil at elevated concentrations. The HHRA and HHRA Addendum indicate these contaminants do not present any unacceptable health hazard; however, they may present a threat to groundwater quality. The regulatory guidance used to evaluate soil cleanup goals that would be protective of groundwater is the RWQCB's *Remediation Guidance for Petroleum and VOC-Impacted Sites*, Section II (RWQCB, 1996). Table 4-1 of that document specifies soil screening levels for TPH and BTEX above drinking water aquifers, taking into account distance between impacted soil and groundwater, and soil type.

The need to mobilize quickly in the redevelopment of the Site led to a two-tiered approach to soil cleanup goals. Human health-based soil cleanup goals are higher and more easily achievable in the short term. Because shallow soil human health risk goals protective of construction workers and commercial workers could be met relatively quickly, achieving risk thresholds was considered under this plan as "phase one". In phase one, higher shallow soil cleanup values were selected for TPH (compounds without toxic health effects) and BTEX. Accomplishing the phase one goals for shallow soil would enable Site development.

The proposed interim cleanup goals for shallow soil were presented to the RWQCB in the form of two documents submitted in 2012:

1. Proposed Site Remediation Goals, Former Powerine Refinery (SLIC 0318), Santa Fe Springs, California, Murex Environmental, June 13, 2012 (Murex 2012b).

2. Response to RWQCB Comments on Proposed Shallow Soil Cleanup Goals, Former Powerine Refinery (SLIC 0318), Santa Fe Springs, California, Murex Environmental, July 16, 2012 (Murex 2012c).

The outcome of these recommendations is that human health-based cleanup goals will be met during phase one, in addition to addressing the highest levels of TPH and BTEX impacts in shallow soil, also during phase one. After reviewing these documents, the RWQCB agreed to the proposed interim shallow soil cleanup goals as presented in Table II verbally on August 30, 2012 (Murex, 2013a).

4.2.2 Site Soil – Phase Two (Shallow/Deep Soil)

Consistent with discussions with the RWQCB, phase two protection of groundwater soil cleanup goals for shallow and deep soil are consistent with those provided in the RWQCB's *Remediation Guidance for Petroleum and VOC-Impacted Sites*, Section II, Table 4-1 (RWQCB, 1996). Those screening levels are provided in Table II.

4.2.3 On-Site Groundwater Cleanup Goals

Maximum Contaminant Levels (MCLs) as published by the California Department of Public Health (CDPH) will be the goals of the groundwater remedy, as required by the California Water Code. Table II lists these cleanup goals for groundwater.

4.3 Methane Risk Evaluation

Methane in soil beneath buildings is a concern for the health and safety of building occupants, because of the increased risk of fire or explosion. Underground vaults, electrical/utility rooms, and other first-floor rooms in enclosed buildings with a slab-on-grade foundation are at particular risk because of the potential for cracks in the building slab or utility penetrations to become conduits for methane seepage into an enclosed space within the first floor of a structure.

Historical data, as well as field data and observations recorded during the pilot test indicate that methane is present in the subsurface at concentrations above the lower explosive limit of 53,500 parts per million by volume (ppmv). This condition is common in the City of Santa Fe Springs "methane zone," a geographic area of historical petroleum production in which the Site is located. The City of Santa Fe Springs' methane regulations, including the Methane Zone Map and Ordinance Number 955 are included as Appendix B.

As required by the City of Santa Fe Springs, an action level of 25% of the LEL for methane, or 12,500 ppmv (1.25% by volume) has been selected for methane (Murex, 2013a).

5.0 IDENTIFICATION OF IMPACTED AREAS ABOVE CLEANUP CRITERIA

Murex conducted a comprehensive query of all shallow and deep soil investigation data to identify sample locations that contained contaminant concentrations above the cleanup goals as shown in Table II. The following subsections present the impacted areas above the cleanup criteria for the on-site shallow, deep, and groundwater zones.

5.1 Shallow Soil

A number of soil samples collected in the top ten feet at the Site exhibit COC concentrations above the Site human health risk based cleanup levels for shallow soil. Figure 13 shows the occurrence of all contaminants above the TRCs in shallow soil at the Site. Appendix A1 contains supporting lead UCL calculations.

The following sample locations where soil samples exhibit concentrations above the target remediation levels in the Site were identified (Murex, 2013a):

Gasoline Range Organics
B023
B-405
S113
S119

Arsenic
B108
S120
S125
S165
S191
S277

Diesel Range Organics			
B045	B-418	S213	S109
B055	S133	S224	S110
B058	S136	S228	S111
B068	S137	S293	S112
B228	S138	S295	S115
B278	S139	B076	S130
B-413	S149	B-407	S142
B-415	S201	S105	S171
			S275

Motor Oil Range Organics		
B027	S149	B-404
B046	S201	S115
B-413	S213	B261
S136	S224	S130
S137	S228	S171
S138	S293	B121
S139	S295	

Benzene (Area 2 Only)
B188
B-405
S113

Dibenzo(a,h)anthracene (Area 3 Only)
S042

Lead
S148
S277

Appendices A2 through A8 contain shallow soil data used in this analysis.

5.2 Deep Soil

The extent of petroleum hydrocarbon impact in deep soil is based on the results of soil investigation efforts conducted at the Site between 2006 and 2011. Figure 8 presents a three-dimensional depiction of the extent of total petroleum hydrocarbon impact and Figure 9 presents the total VOC extent of impact in similar fashion (Murex, 2013a). It is apparent that deep soil contamination of the Eastern Property is significantly less in magnitude and extent than occurs in the Western Property.

The soil analytical results were grouped by Murex (Murex, 2013a) into three subzones (A, B, and C), each made up of 30-foot intervals extending from the surface to the water table (approximately at 90 to 100 feet, depending upon the location on Site). For each subzone, concentrations of COCs relative to their target cleanup goals were used to develop isoconcentration contour maps. TPHg and BTEX, exhibiting similar properties, were grouped as one chemical family, and TPHd was the second.

Murex normalized the concentration for each constituent by dividing the concentration by the corresponding TRC. For each depth interval, the isoconcentration contour magnitude was developed based on the highest normalized TPHg, BTEX, or TPHd concentration. Figures 14, 15, and 16 present normalized concentrations contours developed by Murex for TPHg and BTEX for the three subzones A (0 to 30 ft), B (30 to 60 ft), and C (60 to groundwater). Figures 17, 18, and 19 show the normalized isoconcentration magnitude contours for TPHd for the same three depth intervals.

5.3 On-Site Groundwater

As discussed in Section 3.3.3, sampling and analysis of groundwater from Site wells in the second quarter of 2013 indicates that only benzene was detected at a concentration exceeding the TRCs listed on Table II for groundwater (Murex, 2013b). Benzene was detected at concentrations exceeding the TRC of 1 µg/L in three wells (W-10, 6.3 µg/L; MW-702, 15 µg/L; and MW-706, 5.9 µg/L) (Figure 10). Over the last two quarterly monitoring events, benzene concentrations in samples from those wells have been relatively low (16 µg/L or less). Benzene concentrations in eastern wells generally appear to be declining over time, as do concentrations of the other BTEX constituents (Figure 11) and petroleum compounds.

The TRCs for TPHg and TPHd are the presence of FPPH. No FPPH TPHg or TPHd was observed during the second quarter monitoring event, nor has FPPH been observed for many years in Site wells. Concentrations of TPHg in groundwater generally have been declining.

6.0 REMEDIAL ACTION OBJECTIVES AND ALTERNATIVES EVALUATION

Murex conducted a preliminary focused feasibility analysis to identify appropriate remediation technologies. The Murex analysis addressed the entire refinery site, including the western portion. The Murex alternatives evaluation for the entire refinery site and previously discussed with the RWQCB is included as Appendix C.

Stantec re-evaluated the remedial action objectives and alternative selection considering only the Eastern Property conditions, which exhibit significantly less deep soil and groundwater contamination than is observed on the Western Property.

6.1 Remedial Action Objectives

The following remedial action objectives are proposed for the Site:

- Mitigate unacceptable risk to humans involved in development and re-use of the property by reducing surface and shallow soil concentrations in the upper 10 feet to below human health risk-based cleanup levels derived for the Site (i.e., the TRCs specified for shallow soil in Table II), and controlling vapor intrusion to buildings through engineering controls.
- Expedite beneficial re-use of the property through redevelopment for commercial/industrial use.
- Protect groundwater from further degradation from Site contaminants.

6.2 Evaluation of Remedial Alternatives

Shallow Soil: Murex considered several remedial alternatives for shallow soil and recommended excavation with off-site disposal. Stantec concurs with this alternative as the most expeditious and cost-effective approach for reducing surface and shallow soil concentrations to meet site-specific human health risk-based cleanup levels.

Deep Soil and Groundwater: Murex considered these media separately in its alternatives analysis; recommending bio-venting and air injection for deep soil and air sparging for groundwater. Murex's conceptual approach involved treatment of deep soil through bio-venting in the northwest portion of the Site, and bio-venting with air injection in the southwestern portion of the Site (Figure C1). Murex proposed groundwater remediation in the saturated zone through air sparging in the northwestern portion of the Site, with an additional few air sparging wells along the southern boundary of the refinery.

Stantec reconsidered the need for application of active deep soil and groundwater remediation technologies at this time based on the absence of current and future exposure risk, the current

low levels of groundwater contamination present beneath the Site, and the downward trend in concentrations observed over time in affected Site wells. As discussed in Section 5.3, sampling and analysis of groundwater from Site wells in the second quarter of 2013 indicates that benzene was detected at concentrations that only marginally exceeded the groundwater TRC listed on Table II. No other constituents exceed the groundwater TRCs listed in Table II. Concentrations of BTEX and petroleum have been decreasing over time, and no FPPH has been observed in Eastern Property wells for many years. The HHRA concluded there is no current exposure pathway for groundwater and characterized potential future on-site residential use of groundwater (the only evaluated complete exposure pathway) as unlikely. Down gradient off-site groundwater is significantly impacted and is the subject of continued investigation and probable off-site remediation at some point. Therefore, the current low levels of benzene present in groundwater beneath the Site do not present an imminent threat to off-site groundwater warranting immediate action.

Deep soil and groundwater are inextricably linked with respect to remediation considerations. The HHRA identified no unacceptable risk to human health or the environment from deep soil contamination because there is no direct complete exposure pathway, and building engineering controls required by the City of Santa Fe Springs will adequately address vapor intrusion threats. Concerns with deep soil contamination at this Site center on the potential for deep soil contaminants to adversely affect underlying groundwater quality. Therefore, without the reasonable expectation of future significant degradation of groundwater, there is no driving reason to implement active deep soil remediation. Although the screening levels in the RWQCB's *Remediation Guidance for Petroleum and VOC-Impacted Sites*, Section II, Table 4-1 (and adopted as clean up goals for this Site) are established for protection of groundwater, decisions regarding the need for active soil remediation to protect groundwater at a mature site, such as this one, should be made in the context of the actual observed impact to groundwater and reasonable expectations for potential future groundwater impacts.

There is no question that the refinery property affected underlying groundwater in the past, including beneath the western half of the Eastern Property. It is likely that multiple factors have influenced the substantial declines in BTEX and petroleum concentrations observed in Site wells over the last decade, including degradation of petroleum in the vadose and saturated zones, and the large decline in water levels that has occurred. It is possible that benzene and petroleum concentrations could fluctuate somewhat in the future, particularly with significant water level rise if it were to occur. However, Stantec considers it likely that such fluctuations would be temporary and the overall trend will continue downward, resulting in the meeting of groundwater TRCs beneath the Site for all constituents, possibly in the near future, without the need for active

remediation of deep soil or groundwater. It is recognized that this will need to be verified through ongoing monitoring of groundwater, and it is also considered prudent to have contingency plans for active remediation in the event that conditions unexpectedly worsen and warrant more active remediation of soil and/or groundwater.

7.0 PROPOSED REMEDIAL ACTION

The proposed remedial action for the Site is:

- Shallow soil - Excavation and off-site disposal
- Deep soil and groundwater – Groundwater monitoring with contingency deep soil and groundwater subsurface remediation infrastructure and planning
- Installation of engineering controls per City of Santa Fe Springs building codes during Site redevelopment to mitigate vapor intrusion into occupied buildings

The proposed remedial action aggressively addresses shallow soil contamination to mitigate human exposure risk while allowing expeditious redevelopment to return the property to beneficial use. It also provides for monitoring of the current downward concentration trends in groundwater while simultaneously providing contingency infrastructure and planning in the event that groundwater conditions unexpectedly worsen and warrant more active groundwater and deep soil remediation. The proposed remedy is protective of both human health and groundwater and is cost effective given the risks posed by the Site.

7.1 Shallow Soil

Shallow soil with concentrations exceeding TRCs has been delineated by Murex based on the results of previous soil sampling. Soil within these delineated areas will be excavated and disposed of off-site, as discussed further in Section 8.4. Confirmation sampling and analysis will be conducted as excavation progresses to identify the need for additional step-out excavation to remove all shallow soil with concentrations exceeding TRCs.

7.2 Deep Soil and Groundwater

Groundwater will be monitored to verify that the currently observed long-term downward trend in contaminant concentrations continues. Monitoring will be conducted quarterly for BTEX, TPHg, TPHd, and MTBE. Annual reports will be provided to the RWQCB with recommendations for continued monitoring and/or adjustments to the monitoring program, where warranted, and implementation of more active remedial strategies if conditions worsen sufficiently. As a contingency, subsurface remediation infrastructure (e.g., injection/extraction wells and underground process piping) will be installed, as necessary, within planned redevelopment building locations to facilitate expedited remedial action, if deemed necessary in the future.

7.3 Building Engineering Controls

Engineering controls will be necessary to mitigate the possible threat of vapor intrusion into new occupied buildings from methane and VOCs. These controls are likely to wholly or partially include

impermeable vapor barriers and/or passive vent piping beneath building slabs, features to allow increased air exchange within the buildings, as well as other components. These engineering controls will be installed as required by and under the review and inspection of the City of Santa Fe Springs Department of Planning and Development.

8.0 IMPLEMENTATION

The following discusses the implementation of remedial actions for the Site. Because five acres of the Eastern Property are subject to a lease back provision of the purchase agreement through June 30, 2015, shallow soil remedial actions may be conducted in two phases; the first being conducted for 32 acres of the Site, and the second being conducted for the remaining five acre lease back area once the lease back period ends. The following discussions for shallow soil remediation apply to both areas, but the activities in each area may be conducted separately in time.

8.1 General Approach

The stages of advancement on the Site are expected to follow the following general path:

1. Planning, permitting, and regulatory approval process
2. Demolition of remaining refinery facilities (office/lab buildings, above-ground storage tanks, piping, and concrete slabs and footings)
3. Profiling and disposal and/or scrapping of demolition debris
4. Completion of Site characterization (i.e., under-structure sampling, where necessary)
5. Shallow soil excavation, management, profiling, and disposal
6. Site restoration and mass grading
7. Entitlements and redevelopment approvals
8. Installation of deep soil and groundwater remediation subsurface infrastructure, as necessary
9. Development construction and concurrent monitoring of groundwater

8.2 Demolition

Demolition of above ground refinery structures will be completed by the current property owner after sale of the property to Goodman. Goodman will complete demolition of the below ground refinery structures.

The demolition of remaining below ground refinery facilities on the Site will be performed in accordance with the applicable and appropriate protocols, under the jurisdiction of the appropriate municipal or environmental agencies. Asphaltic coatings overlaying the soil berms that surround groups of ASTs will be removed separately, subject to disposal restrictions similar to those of roofing shingles. Demolition of concrete foundations and subsurface structures shall be conducted in consultation with the Site environmental manager, and may be conducted at the same time as soil excavation, given the possibility of encountering impacted soil. Demolition of all

below-surface structures will comply with the requirements of the Soil Management Plan (SMP), Appendix G, which is discussed further in the following sections. Demolition activities will be initially conducted over 32 acres of the property (i.e., the portion not subject to the lease back provision). Below ground demolition activities in the five acre lease back area will commence after the lease back period ends on or before June 30, 2015 and the above ground structures have been demolished, or sooner as can be arranged through agreement with the lease holder.

8.3 Supplemental Characterization

The investigation under refinery structures will characterize soil beneath ASTs, process units, and basins as they are demolished or dismantled and removed from the Site (Figure 20). Soil sampling under structures shall be conducted in accordance with Section 4.2.3 from the August 2007 *Supplemental Soil Investigation Workplan (*ARCADIS, 2007). Hollow-stem auger drilling rigs will be used to advance the soil borings, of which half will be completed to a depth of 40 ft-bgs and the other half will be completed to groundwater (approximately 100 ft-bgs). Samples will be collected using a split spoon sampler in accordance with the procedures described in the 2007 ARCADIS workplan. A total of 5 samples per boring will be analyzed for the 40 ft-bgs borings at depths of 5 feet, 10 feet, 20 feet, 30 feet, and 40 feet. A total of 10 samples per boring will be analyzed for the 100 ft-bgs borings at depths of 5 feet, 10 feet, 20 feet, 30 feet, 40 feet, 50 feet, 60 feet, 70 feet, 80 feet, and 90 feet. Each of the samples will be analyzed for TPH and VOCs by modified EPA method 8015. The 5- and 10-foot samples will also be analyzed for PAHs and Title 22 metals.

The following process flow diagram describes how the data collected during the supplemental characterization will be used.

Supplemental soil investigation activities will be initially conducted over 32 acres of the property (i.e., the portion not subject to the lease back provision) following above ground and below ground demolition of refinery structures. Supplemental soil investigation activities in the five acre lease back area will commence after the lease back period ends on or before June 30, 2015, or once the structures in that area are demolished and access can be arranged through agreement with the lease holder.

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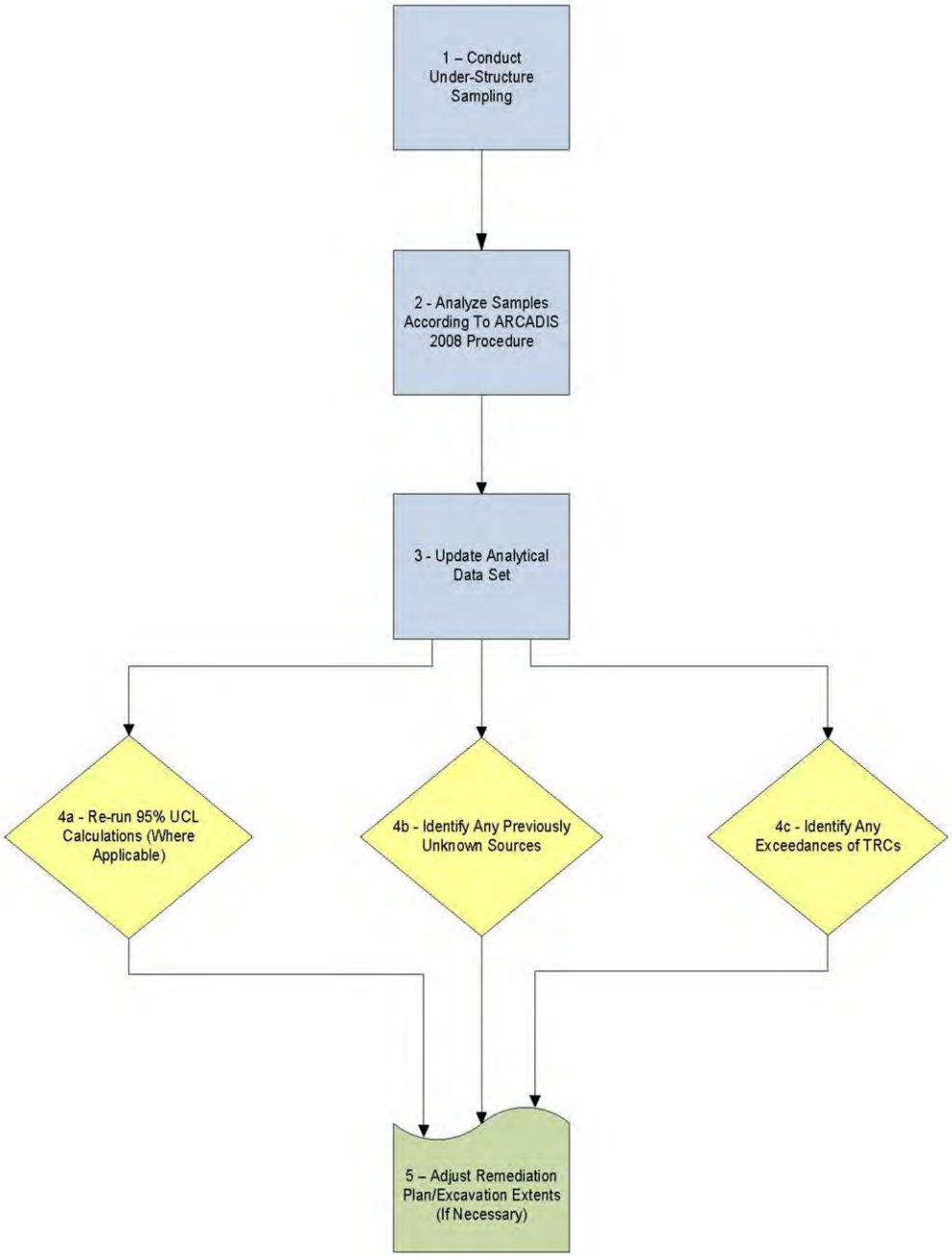
Under-Structure Sampling



8.4 Shallow Soil Excavation

8.4.1 Areas Identified for Excavation

Using kriging, isoconcentration contours for shallow soil impacts were generated by Murex and used to create excavation plans where impacts exceeded Site cleanup goals. Figure 21 depicts these areas. Individual Site section figures within Appendix E (drawings E1 through E-4) depict the planned excavation extents. Table III lists each excavation and the estimated removal volumes.

8.4.2 Health & Safety

As directed by the RWQCB, the selected remediation contractor shall prepare a site-specific health and safety plan that complies with Title 40 of the Code of Federal Regulations (CFR), Section 1910.120 (40CFR1910.120). The health and safety plan will be provided as Appendix F of this RAP to the RWQCB prior to initiation of remedial activities.

8.4.3 Utility Survey

A desktop study will be completed using historical maps to identify the presence and location of subsurface utilities near areas of proposed excavation. Subsequently, a private utility locator service will conduct geophysical surveying to locate underground utilities in the vicinity of each excavation area. The survey methods may include using electromagnetic pipe and cable scanning devices, induction and metal detection, and ground-penetrating radar (GPR). Underground Service Alert (USA) will also be contacted a minimum of 72 hours prior to the initiation of any excavation activities.

8.4.4 Required Plans and Documentation

Additional documentation will be provided to agencies involved in permitting and overseeing the excavation work, including the City of Santa Fe Springs. These documents include:

- Truck traffic plan – detailing the route by which soil export trucks will travel over roads within the city;
- Grading plan – a set of civil engineering topographic plans detailing the volumes of soil planned for excavation, and how import fill will be placed, compacted, and graded.

8.4.5 Site Preparation

Prior to commencing excavation activities, a topographical survey of the Site will be completed, and excavation locations will be marked and surveyed. These tasks will be completed by a California-licensed land surveyor. If necessary, relocation of utilities will be completed prior to excavation. Temporary facilities, such as exclusion zone fencing, sanitary facilities, and decontamination stations will be erected.

A truck inspection, manifesting, and cleaning station will be positioned at a designated Site entrance. Crushed stone and/or rumble plates will be used to prevent the spreading of impacted soil onto Lakeland Road. More detailed information about soil management is included in the Soil Management Plan (Appendix G).

8.4.6 Site Control and Monitoring

Excavation locations will be mapped and excavation boundaries will be delineated to include offsets. Demarcation will be performed using one or more of the following materials: high-visibility paint, caution tape, stakes, and/or traffic delineators.

A dust monitoring program will be implemented during excavation activities to monitor for particulate matter (fugitive dust). The dust monitoring protocol is included in the Soil Management Plan (Appendix G).

A stormwater pollution prevention plan (SWPPP) will be developed for the Site as a part of the design and grading plans. SWPPP control measures, such as sandbags, hay bales, silt fencing, and crushed stone will be used to mitigate the outflow of any sediment during rain events.

8.4.7 Excavation and Soil Handling Methods

The proposed excavation is intended to remove soil that is impacted with one or more of the following contaminants: TPHg, TPHd, TPHmo, benzene, arsenic, and lead. The segregation, stockpiling, profiling, and disposal procedures for impacted waste soil are discussed in the Soil Management Plan (Appendix G) and summarized below. Figures 22 and 23 illustrate the implementation steps for excavation, soil management, and waste soil segregation.

Step 1 – Mark/outline areas of excavation

Excavation locations will be mapped and excavation boundaries will be delineated to include offsets. Maps of the excavations will be maintained by the field engineer(s) throughout the excavation activities using surveyed base points (such as benchmarks or surveyed offset stakes) as reference.

Step 2 – Excavate Soil

Using the Soil Management Plan (Appendix G) as a guide, earth-moving equipment (e.g., excavators, front-end loaders) will be used to excavate the soil according to Appendix E and Table III.

Step 3 –Segregate soil

Where possible (TPH impacted areas), soil can be judged for its relative level of impact based on odor, staining, and photoionization detector (PID) readings. Where this is not possible (arsenic/lead contaminated soil, for instance) the pre-determined excavation extents will be wholly moved to stockpiles where characterization sampling is to occur. Excavated soils that exhibit evidence of impairment will be segregated for waste management (see Figure 23).

Step 4 – Confirmation sidewall/bottom sampling

Confirmation samples will be collected to confirm the removal of contaminated soil that exceeds the Site cleanup goals. Refer to Section 8.4.8 of this RAP for further discussion regarding confirmation sampling.

Step 5 – Determine if confirmation samples are below cleanup goals

Excavation of each area is considered complete when laboratory analyses indicate that concentrations of COCs in confirmation samples are below the Site shallow soil cleanup goals, as presented in Table II. Upon completion, each excavation will be secured or backfilled, as appropriate.

If laboratory analyses indicate that concentrations of COCs in confirmation samples exceed the Site shallow soil cleanup goals, a 12-foot lateral expansion of the excavation will be implemented in the area of exceedance, and the flow of work will return to Step 2, above (see Figure 22).

Earthwork in excavation areas will be overseen by a field engineer or geologist working under the direction of a California-registered civil engineer or geologist to ensure worker safety and proper documentation. The oversight personnel will provide documentation, collect sidewall and bottom samples, monitor dust, odor, and VOCs, and direct the activities of the remediation contractor.

Soil demonstrated to be free from hazardous substances or exhibit known contaminants below the Site shallow soil cleanup goals may be re-used as backfill. These decisions will be made by a California-registered civil engineer or geologist, and in consultation with the RWQCB.

8.4.8 Confirmation Sampling and Testing

Confirmation samples will be collected to confirm the removal of contaminated soil that exceeds the Site shallow soil cleanup goals. Samples will be analyzed according to the intended contaminant removal goals of each excavation (e.g., an excavation designed for the removal of TPHg will be

subjected to sidewall and bottom sampling for TPH) unless visual or olfactory evidence suggests that other contaminants may be present above selected remediation criteria. The analytical program will include the following U.S. Environmental Protection Agency (EPA) analytical methods:

- TPH (TPHg, TPHd, TPHmo) by EPA Method 8015M;
- VOCs by EPA Method 8260B;
- Title 22 Metals (or individual metals, as appropriate) by EPA Method 6010B/7400; and
- PAHs by EPA Method 8310.

Confirmation soil samples will be collected manually using a drive sampler lined with a stainless-steel tube or with a stainless steel trowel and certified, pre-cleaned laboratory-supplied glass jars. Samples may be gathered from excavator bucket teeth, provided the sample is acquired from a relatively undisturbed bottom or sidewall, and the slough has been wiped away prior to sampling.

The confirmation samples will be collected from an interval of 0 to 6 inches beneath the exposed excavation bottom and the excavation sidewall to confirm vertical and lateral removal. Upon recovery of the sample tube from the drive sampler, the tube will be trimmed to remove excess soil. Samples collected with a trowel will be placed in certified, pre-cleaned laboratory-supplied glass jars. The samples will be labeled with the date sampled, a unique identification number, and other identifying information. Samples will be sealed in sealable plastic bags and placed on ice in insulated coolers.

Each of the confirmation soil samples will be analyzed at a CDPH Environmental Laboratory Accreditation Program (ELAP)-certified laboratory for analysis. Soil samples will be submitted to the analytical laboratory on an expedited 24-hour turn-around time.

If laboratory analyses indicate that concentrations of COCs in confirmation samples exceed the Site cleanup goals, a 12-foot lateral expansion of the excavation will be implemented in the area of exceedance, as described in Section 8.5.7.

8.4.9 Field Documentation and Reporting

Documentation of field conditions and mitigation procedures will be noted in daily field reports. Field notes will document where, when, how, and from whom project information was obtained. Entries will be completed and accurate enough to permit reconstruction of field activities. Entries of activities will be recorded daily in the field notes and at a minimum will include the following:

- Site name and address;

- Recorder's name;
- Team members and their responsibilities;
- Time of site arrival and time of site departure from the Site;
- Other personnel on-site;
- Summary of any on-site meetings;
- Quantity of soils excavated and general description of soil and soil location;
- Quantity of soils temporarily stored on-site, showing a sketch of the stockpile locations;
- Type and quantity of soils shipped by each transporter and manifest numbers associated with shipments;
- Deviations;
- Personnel records;
- Monitoring results/records;
- Wind direction and relative speed;
- Levels of safety protection; and
- Calibration readings for any equipment used, and equipment model and serial numbers.

Additional items to be included in daily field notes include dust monitoring results, PID readings, and collection of samples. The collection of samples will be documented daily on a site map, including the use of a measuring tape/wheel to record sample locations.

Prior to backfill, sample locations will be surveyed by a California-licensed land surveyor.

The progress of RAP implementation will be reported in the form of quarterly progress reports.

8.4.10 Decontamination

Entry to the work area where the contaminated materials are encountered will be limited to avoid unnecessary exposure and related transfer of potentially impacted soil. Equipment or truck(s) exiting the work area will be decontaminated in a designated decontamination area before leaving the Site.

Disposable equipment intended for one-time use will not be decontaminated, but will be packaged for appropriate disposal. Relatively small equipment that comes into direct contact with potentially impacted soil or water will be decontaminated as described below.

1. Non-phosphate detergent and tap water wash, using a brush if necessary
2. Tap-water rinse
3. Initial deionized/distilled water rinse

Decontamination will occur prior to and after each designated use of a piece of equipment. Larger equipment, such as trucks and excavators that come into direct contact with potentially impacted soil or water will be decontaminated prior to leaving the Site to prevent the offsite tracking of impacted soil. Trucks will be visually inspected before leaving the Site and any dirt adhering to the exterior surfaces will be brushed off and collected on plastic sheeting. The storage bins or beds of the trucks will be inspected to ensure the loads are properly covered and secured. Excavation equipment surfaces will also be brushed off prior to removing it from the exclusion zone.

Equipment will be decontaminated in a pre-designated area on pallets or plastic sheeting. Cleaned bulky equipment will be stored on plastic sheeting in non-impact areas. Cleaned small equipment will be stored in plastic bags. Materials to be stored more than a few hours will also be covered.

Decontamination wash water will be collected and stored in drums, labeled, and profiled as potentially hazardous waste.

8.4.11 Site Restoration

The soil excavations will be backfilled with clean soil imported from on- and off-site sources, depending upon the availability of soil and the progress of development activities at the time of the excavation. The imported soil will be tested and confirmed clean prior to receiving it at the Site according the DTSC Information Advisory, Clean Imported Fill Material (DTSC, 2001). The backfill material may or may not be compacted, depending upon the depth of the excavation, the progress/status of mass grading activities connected with the property redevelopment, and the requirements of the City of Santa Fe Springs building department.

An appropriate number of characterization samples will be gathered from stockpiles or borrow fill source in order to ensure the imported soil is uncontaminated and acceptable. Fill material that is not characterized at the borrow area will be stockpiled until the analyses have been completed. Should contaminants exceeding acceptance criteria be identified in the stockpiled fill material, that material will be deemed unacceptable and new fill material will be obtained, sampled, and analyzed. Ideally, all sampling and analyses should be completed prior to delivery of fill material to the Site to ensure the soil is free of contamination, and to eliminate unnecessary transportation charges for unacceptable fill material.

8.5 Contingency Deep Soil/Groundwater Remediation Subsurface Infrastructure

Contingency deep soil/groundwater remediation subsurface infrastructure will be designed by a qualified, California-licensed engineer experienced in soil and groundwater remediation. The

system design shall be reviewed and approved by the RWQCB and City of Santa Fe Springs. The system must comply with applicable plumbing and electrical codes.

A detailed system design will be prepared under separate cover and is not included in this RAP. Example remediation system well designs to be considered at the system design stage are shown in Figures C-2, C-3, and C-4 in Appendix C. Figure 24 summarizes the logic process for conducting the monitoring program and implementing active deep soil and/or groundwater remediation, if warranted.

8.5.1 Permitting

Permits for all wells advanced into the groundwater table must be obtained. System construction will require first submitting the design through plan check with the City of Santa Fe Springs. Once approved, an inspector will be assigned to the project and will require inspection visits for sign-off at certain project milestones.

8.5.2 Well Installation

The wells will be installed by a California licensed well contactor using a hollow-stem auger drill rig that is able to reach the approximate 100-foot depth. All well installation activities will be completed under the direct supervision of a California-registered civil engineer or geologist. To be determined at the design stage, soil samples may be collected during installation of the wells to facilitate system design. Wastes from well installation will be staged onsite in roll-off bins or drums, and properly characterized/profiled prior to being disposed of at an approved disposal facility.

8.6 Groundwater Monitoring

Existing and/or new groundwater wells will be monitored to evaluate groundwater elevations and concentrations of BTEX and petroleum compounds in groundwater beneath the Site. The number and locations of the monitoring wells and the specific monitoring parameters will be determined during the engineering design stage as development plans for the property are finalized. Monitoring will be initially conducted quarterly, with annual report submissions to the RWQCB documenting monitoring results and providing recommendations for continued monitoring with adjustments, as necessary, or implementation of active remedy contingencies, if warranted.

8.7 Variance

As conditions in the field may vary, it may become necessary to implement variances when performing the proposed activities as presented in this RAP. Field personnel will notify the project manager when deviations from this RAP are necessary. RWQCB will be notified of significant variances immediately, and a verbal or written approval will be obtained from RWQCB before

implementing the modifications, where possible. Variances to the approved RAP will be documented in writing; an amended RAP may be necessary if excessive variances are required.

9.0 PROJECT SCHEDULE

The conceptual schedule for the implementation of the RAP is shown in Figure 25. The schedule will depend on the schedule for Site redevelopment and may change significantly. In particular, the dates shown on the schedule should be considered conceptual and for illustrative purposes only at this time. The schedule will be revised as development plans are finalized.

As noted previously, five acres in the southwest portion of the Eastern Property are subject to a purchase agreement lease back provision through June 30, 2015. The actual end of the lease back period will depend on the lessee needs and may occur sooner. Goodman intends to complete shallow soil closure in time to initiate building construction by January 2015, and the schedule reflects this intention by showing shallow soil remediation as one effort in time. If a separate shallow soil remediation effort is later determined to be necessary for the five acre lease back area, the schedule will be revised and the RWQCB will be informed.

10.0 REFERENCES

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17. Murex, 2012a. Addendum to the Free-Phase Petroleum Hydrocarbon Investigation Report, Former CENCO Refinery, 12345 Lakeland Road, Santa Fe Springs, California, January 25.

18. Murex, 2012b. Proposed Site Remediation Goals, Former Powerine Refinery (SLIC 0318), Santa Fe Springs, California, Murex Environmental, June 13.

19. Murex, 2012c. Response to RWQCB Comments on Proposed Shallow Soil Cleanup Goals, Former Powerine Refinery (SLIC 0318), Santa Fe Springs, California, Murex Environmental, July 16.

20. Murex 2013a. Remedial Action Plan, Former Powerine Refinery, 12345 Lakeland Road, Santa Fe Springs, CA, SLIC No. 0318, ID No. 2040071, CAO 97-118. Prepared for Isola Law Group, LLP. March 1.

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24. Versar. 1997. *Preliminary Results of Potentially Responsible Party (PRP) Research for Facilities Surrounding the Powerine Refinery Property Located in Santa Fe Springs, California*. November 25.

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TABLES

Table I

Summary of Historical Releases and Suspected Sources [1]

Parcels 8009-022-053, -054, -055, -056, -057, and -058 Former Powerine Refinery

Santa Fe Springs, CA

Number	Date	Location	Documented Release?	Data Supports Release?	Product	Notes	Requires Remediation?	Evidence Boring ID
7	Dec-77	AST 27093[2]	Yes	No	Unknown	Overfill, Unknown Amount	No	B036, B275
8	Jul-78	AST 5082	Yes	Yes	Gasoline	Tank overflow	Yes	B038
12	Sep-79	Alkylation Unit, North Center	Yes	No	Unknown	Unknown Amount	No	B118, B295
13	Feb-80	Catalytic Cracking Unit, Mid Center	Yes	Yes	Sulfur, naphtha, H2	Fire in Cracking Unit	Yes	S111, B405
14	May-80	AST 27093	Yes	No	Unknown	Overfill, Unknown Amount	No	B036, B275
16	Jun-82	Underground tunnel containing various pipelines and conduits - connected refinery to former Bloomfield property	Yes	No	Gasoline	Crude oil detected at low levels, but not gasoline	No	B001, B011
18	Summer 1983	AST 20094	Yes	Yes	15,000 BBL Diesel	Diesel fuel reportedly flowed west and overtopped the berm, pooling between ASTs 20053, 10074, and 34008.	Yes	B413, B415
19	Unknown	AST 60108	No	Yes	Light Catalytic Gas	B249 indicates shallow TPHg[3] impacts (2,400 mg/kg); B055 indicates heavier diesel impacts at 5-10 ft	Yes	B055, B249
20	Unknown	Rubble, scrap and crude petroleum disposal area	No	Yes	Unknown	B068 indicates TPHmo[3] contamination in upper 30 ft	Yes	B068
21	Unknown	AST 40106	Yes	No	Topped Crude Oil	Tank bottom failure described in Environmental Risk Assessment (RSI, 1996)	No	B246
22	Unknown	AST 27105	Yes	Yes	Topped Crude Oil	Tank bottom failure described in Environmental Risk Assessment (RSI, 1996)	Yes	B048
23	Unknown	Area in rear of administration building	No	Yes	TPHg, TPHd, TPHmo	Borings B120, B121, B122	Yes	B120, B121, B122
24	Unknown	AST 27089	Yes	Yes	Diesel	Tank bottom failure described in Environmental Risk Assessment (RSI, 1996)	Yes	B139
28	Unknown	AST 10095	Yes	No	Light Cut Gasoline	Tank bottom failure described in Environmental Risk Assessment (RSI, 1996)	No	B037, S152
29	Unknown	AST 10096	Yes	No	Gasoline	Tank bottom failure described in Environmental Risk Assessment (RSI, 1996)	No	B038
30	Unknown	Former Lomax Unit	No	Yes	Gasoline	Borings S109, S119, B242, and B315 exhibit shallow benzene	Yes	S119, S109, B242, B315
31	Unknown	AST 20014	No	Yes	Diesel	Borings B045, B417, B418 exhibit shallow diesel contamination	Yes	B045, B417, B418

Notes: [1] The release numbering is unchanged from the previous Murex refinery-wide RAP. Only those release features associated with Parcels 8009-22-53, -54, -55, -56, -57, and -58 are listed.

[2] AST - Above ground storage tank

3 TPHg - Total petroleum hydrocarbons - gasoline range organics; TPHmo - total petroleum hydrocarbons motor oil range organics

Table II
Selection of Target Remediation Criteria (TRCs)
Parcels 8009-22-53, -54, -55, -56, -57, and -58 Former Powerine Refinery
Santa Fe Springs, CA

Chemical of Concern	Screening Level 1 - Human Health Risk (mg/kg)	Screening Level 2 - RWQCB Screening Levels[1] (mg/kg)	Screening Level 3 - MCL (mg/L)	Selected Cleanup Goal	Notes
Shallow Soil (0-10 ft bgs) "Phase 1"					
Arsenic	13.0	--	--	**13 mg/kg**	Site wide - Cleanup Goal Selected by DTSC
Benzene	4.0	0.066	--	**4.0 mg/kg**	Risk value selected (Risk Driver in Area 2 Only) - Residual benzene in upper 10 feet will be managed by bioventing
Dibenzo(a,h)anthracene	0.6	--	--	**0.6 mg/kg**	Risk value selected (Risk Driver in Area 3 Only)
Lead	320	--	--	**320 mg/kg[2]**	Soil that exceeds the 95% UCL of 320 mg/kg will be removed, as selected by DTSC
Toluene	Not a risk driver	4.0	--	**--**	Not a Risk Driver - Residual toluene will be addressed along with deeper soil impacts
TPH(gasoline range)	Not a risk driver	500	--	**2,500 mg/kg**	Short Term Goal for Development[3] = 5x RWQCB Screening Level - Residual TPHg will be addressed along with deeper soil impacts
TPH(diesel range)	Not a risk driver	1,000	--	**5,000 mg/kg**	Short Term Goal for Development[3] = 5x RWQCB Screening Level - Residual TPHg will be addressed along with deeper soil impacts
TPH(motor oil range)	Not a risk driver	10,000	--	**10,000 mg/kg**	RWQCB screening level selected
Xylenes	Not a risk driver	40.0	--	**--**	Not a Risk Driver - Residual xylenes will be addressed along with deeper soil impacts
Deep Soil (10-100 ft bgs)[4] "Phase 2"					
Benzene	--	0.066	--	**0.066 mg/kg**	TRC Goal = RWQCB screening level Table 4-1 1996 Guidebook
Ethylbenzene	--	15	--	**15 mg/kg**	TRC Goal = RWQCB screening level Table 4-1 1996 Guidebook
Toluene	--	4.0	--	**4 mg/kg**	TRC Goal = RWQCB screening level Table 4-1 1996 Guidebook
TPH(gasoline range)	--	500	--	**500 mg/kg**	TRC Goal = RWQCB screening level Table 4-1 1996 Guidebook
TPH(diesel range)	--	1,000	--	**1,000 mg/kg**	TRC Goal = RWQCB screening level Table 4-1 1996 Guidebook
TPH(motor oil range)	--	10,000	--	**10,000 mg/kg**	TRC Goal = RWQCB screening level Table 4-1 1996 Guidebook
Xylenes	--	40	--	**40 mg/kg**	TRC Goal = RWQCB screening level Table 4-1 1996 Guidebook
Groundwater					
Benzene	--	NA	0.001	**0.001 mg/L**	MCL, as required by Water Code[5]
Ethylbenzene	--	NA	0.3	**0.3 mg/L**	MCL, as required by Water Code[5]
MTBE	--	NA	0.013	**0.013 mg/L**	MCL, as required by Water Code[5]
Toluene	--	NA	0.15	**0.15 mg/L**	MCL, as required by Water Code[5]
TPH(gasoline range)	--	NA	No free product	**No free product**	Based on Low-Threat Policy
TPH(diesel range)	--	NA	No free product	**No free product**	Based on Low-Threat Policy
Xylene	--	NA	1.75	**1.75 mg/L**	MCL, as required by Water Code[5]

Notes

[1]Values assume a distance above groundwater of 80-150 feet

[2]Certain samples exhibiting elevated lead concentration have been selected for excvation so that the resulting 95" UCL in each risk area falls below 320 mg/kg; however, some individual samples that exceed 320 mg/kg will remain as approved by DTSC.

[3]Grading and development activities shall proceed after achieving short-term shallow soil soil TRCs, with the longer-term goal of achieving more stringent soil remediation standards through bioventing. This will allow development activities to proceed as deeper soil remediation progresses.

[4]The longer-term deep soil remedy is intended to also benefit the top 10 feet of soil, where residual TPH/BTEX concentrations will be further reduced.

[5]Maximum Contaminant Levels (MCLs) will be the goal of the groundwater remedy. However, future performance and remedy success may be evaluated as a function of the reduction of threat to the groundwater resource.

Table III
Summary of Soil Excavation Tonnage
Parcels 8009-22--53, -54, -55, -56, -57, and -58 Former Powerine Refinery
Santa Fe Springs, CA

Excavation ID	Contaminants	Depth (ft)	Area (ft^2)	Base Excavation Estimate (tons)	Estimated Clean Portion for Reuse	Disposal Quantity Estimate (tons)
8	TPHd, TPHmo, As	3	1,500	250	0%	250
9	TPHd, TPHmo, As	3	1,400	233	0%	233
10	TPHg, TPHd, TPHmo	5	900	250	25%	188
11	TPHd, TPHmo	4	2,000	444	25%	333
12	TPHg, Benzene	4	625	139	10%	125
13	TPHmo	2	100	11	0%	11
14	TPHg, Benzene	5	900	250	0%	250
15	As, Pb	2	100	11	0%	11
16	TPHd, TPHmo	5	900	250	0%	250
17	TPHg, TPHd, Benzene	10	6,400	3,556	50%	1,778
18	As	2	400	44	0%	44
19	As	2	100	11	0%	11
20	As	7	100	39	50%	19
21	TPHd, TPHmo	Varies	24,000	2,844	25%	2,133
36	TPHd, TPHmo	2	400	222	25%	167
37	TPHd	2	225	25	0%	25
38	TPHd	3	625	104	0%	104
39	TPHd, TPHmo	Varies	1,800	650	0%	650
40	TPHd	2	400	44	0%	44

Table III
Summary of Soil Excavation Tonnage
Parcels 8009-22--53, -54, -55, -56, -57, and -58 Former Powerine Refinery
Santa Fe Springs, CA

Excavation ID	Contaminants	Depth (ft)	Area (ft^2)	Base Excavation Estimate (tons)	Estimated Clean Portion for Reuse	Disposal Quantity Estimate (tons)
41	TPHd, TPHmo	10	5,600	3,111	30%	2,178
42	TPHd	5	900	250	25%	188
43	TPHd	10	3,000	1,667	50%	833
44	TPHd	Varies	5,100	1,800	20%	1,440
45	Pb	1	600	33	0%	33
46	TPHd, TPHmo	2	1,000	111	0%	111
47	TPHd, Pb	4	1,400	311	20%	249
48	TPHmo	6	900	300	0%	300
49	TPHd, TPHmo	5	500	139	0%	139
50	TPHg	10	2,000	1,111	50%	556
51	As	1	400	22	0%	22
52	TPHd	10	900	500	0%	500
53	TPHd, TPHmo	3	400	67	0%	67
54	TPHd	10	1,600	889	50%	444
55	As	2	100	11	0%	11
56	TPHd, TPHmo	3	400	67	0%	67
57	TPHg, Benzene	10	1,600	889	25%	667
58	TPHmo	4	900	200	0%	200
59	TPHd, TPHmo	3	1,200	200	0%	200
60	TPHd, TPHmo	3	2,400	400	30%	280

Table III
Summary of Soil Excavation Tonnage
Parcels 8009-22--53, -54, -55, -56, -57, and -58 Former Powerine Refinery
Santa Fe Springs, CA

Excavation ID	Contaminants	Depth (ft)	Area (ft^2)	Base Excavation Estimate (tons)	Estimated Clean Portion for Reuse	Disposal Quantity Estimate (tons)
61	As	2	100	11	0%	11
62	TPHmo	10	1,500	833	0%	833
	Totals (Tons):			**22,301**		**15,956**
	Contingency[1] (20%) (Tons):			**4,460**		**3,191**
	Totals w/ Contingency (Tons):			**26,762**		**19,148**

Notes:
[1] Contingency is included for unknown conditions.

The estimated volumes are based on available data and any additional data collected in the future could increase the volume to be excavated.

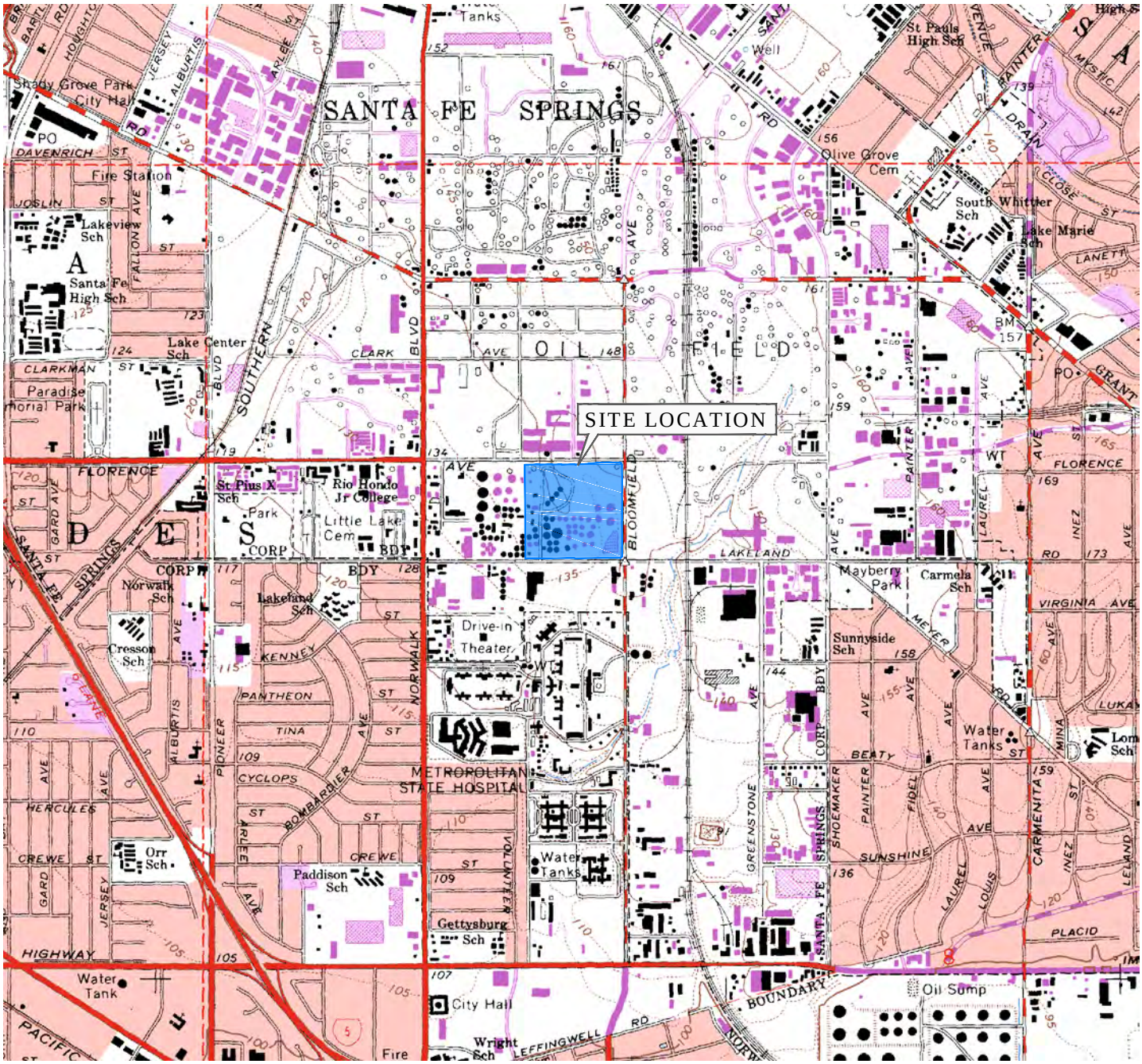
Table IV
Confirmation Soil Sampling and Analysis - Shallow Soil Excavation
Parcels 8009-22-53, -54, -55, -56, -57, and -58 Former Powerine Refinery
Santa Fe Springs, CA

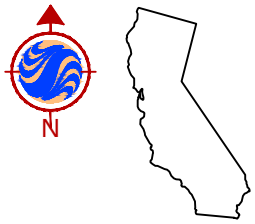
Excavation ID	Contaminants	Risk Area	Depth (ft)	Area (ft^2)	Estimated Number of Soil Samples	Analytes	Analytical Method
36	TPHd, TPHmo	3	2	400	5	TPH	8015 M
37	TPHd	3	2	225	5	TPH	8015 M
38	TPHd	3	3	625	5	TPH	8015 M
39	TPHd, TPHmo	1	Varies	1,800	9	TPH	8015 M
40	TPHd	1	2	400	5	TPH	8015 M
41	TPHd, TPHmo	1	10	5,600	12	TPH	8015 M
42	TPHd	1	5	900	5	TPH	8015 M
43	TPHd	2	10	3,000	7	TPH	8015 M
44	TPHd	1	Varies	5,100	19	TPH	8015 M
45	Pb	1	1	600	5	Pb	6010 B
46	TPHd, TPHmo	1	2	1,000	6	TPH	8015 M
47	TPHd, Pb	1	4	1,400	6	TPH Pb	8015 M 6010 B
48	TPHmo	4	6	900	5	TPH	8015 M
49	TPHd, TPHmo	3	5	500	5	TPH	8015 M
50	TPHg	1	10	2,000	7	TPH	8015 M
51	As	1	1	400	5	As	6010 B
52	TPHd	1	10	900	5	TPH	8015 M
53	TPHd, TPHmo	1	3	400	5	TPH	8015 M
54	TPHd	1	10	1,600	6	TPH	8015 M
55	As	1	2	100	5	As	6010 B

Table IV
Confirmation Soil Sampling and Analysis - Shallow Soil Excavation
Parcels 8009-22-53, -54, -55, -56, -57, and -58 Former Powerine Refinery
Santa Fe Springs, CA

Excavation ID	Contaminants	Risk Area	Depth (ft)	Area (ft^2)	Estimated Number of Soil Samples	Analytes	Analytical Method
56	TPHd, TPHmo	1	3	400	5	TPH	8015 M
57	TPHg, Benzene	1	10	1,600	6	TPH VOCs	8015 M 8021
58	TPHmo	1	4	900	5	TPH	8015 M
59	TPHd, TPHmo	1	3	1,200	6	TPH	8015 M
60	TPHd, TPHmo	1	3	2,400	9	TPH	8015 M
61	As	1	2	100	5	As	6010 B
62	TPHmo	1	10	1,500	6	TPH	8015 M

FIGURES





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FORMER POWERINE REFINERY
PARCELS 8009-022-053, 054, 055, 056, 057 & 058
12345 LAKELAND ROAD
SANTA FE SPRINGS, CALIFORNIA

SITE LOCATION MAP

FIGURE: 1

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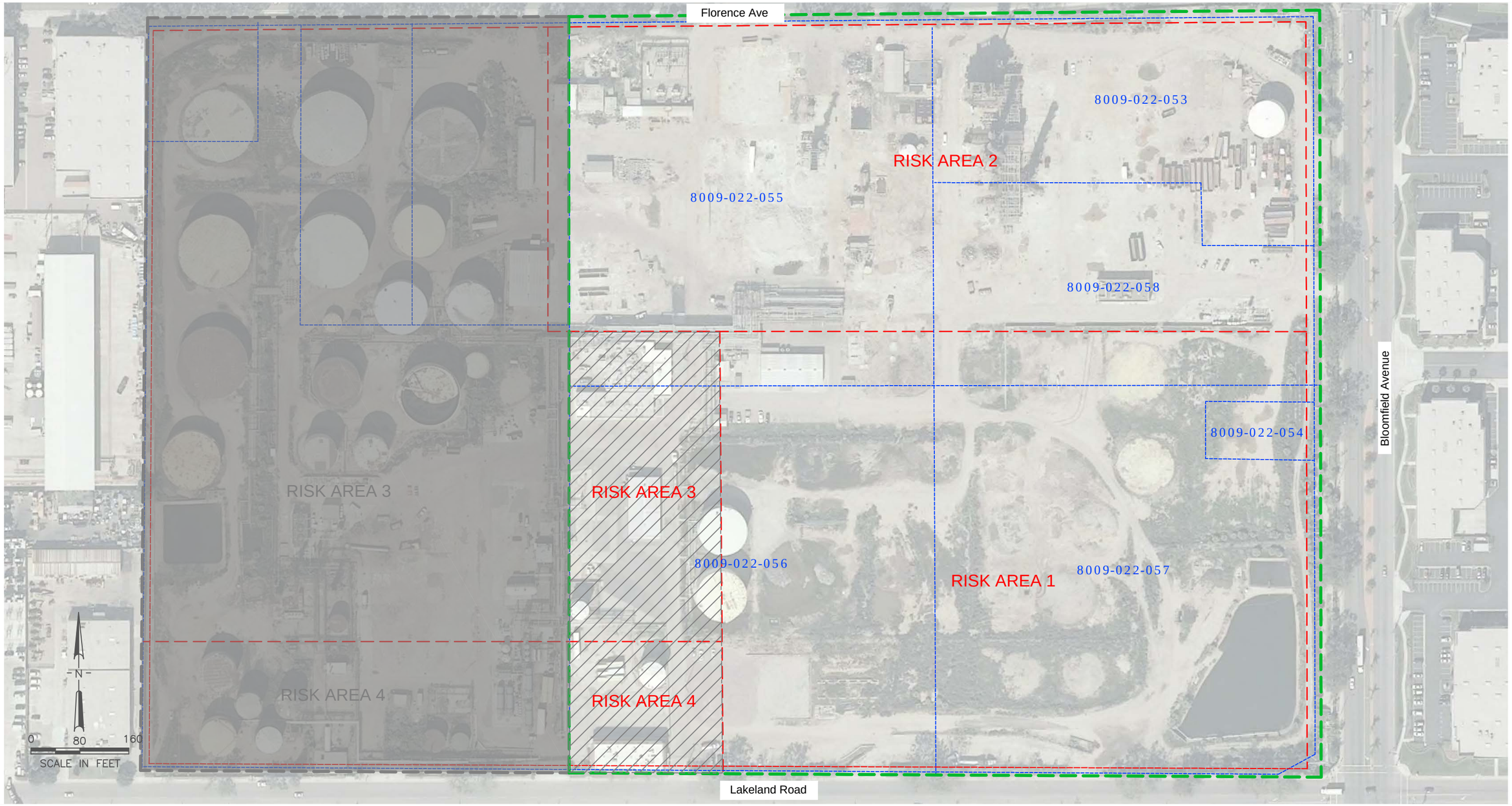

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LEGEND

- BOUNDARY BETWEEN EASTERN AND WESTERN PROPERTIES
- RISK AREA BOUNDARIES
- PARCEL BOUNDARIES
- GRAY SHADED AREA IS FORMER REFINERY PROPERTY NOT ADDRESSED BY THIS RAP
- LEASE BACK AREA

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SANTA FE SPRINGS, CALIFORNIA

SITE MAP
SHOWING RISK AREAS AND PARCELS

FIGURE: 2

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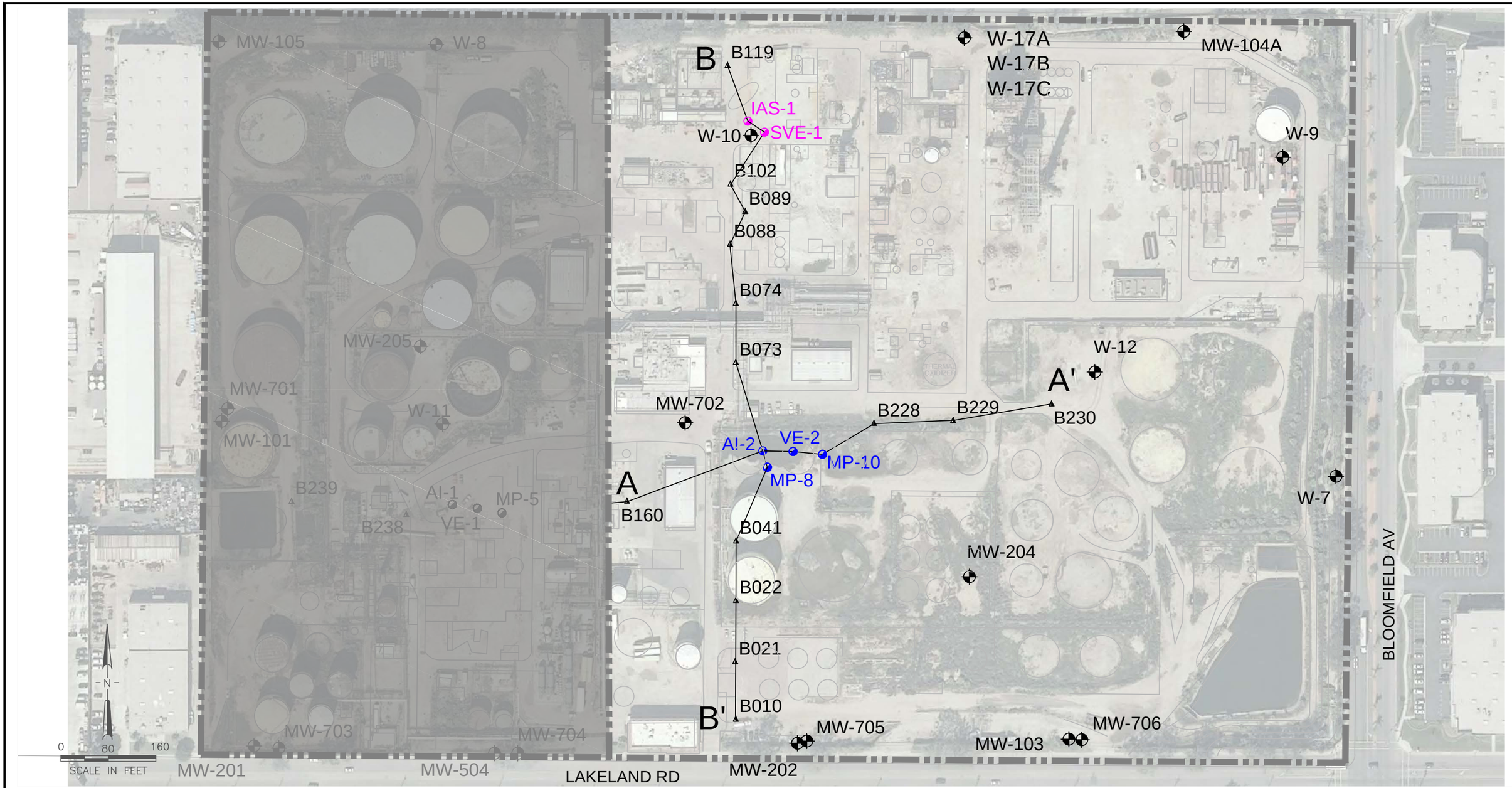

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LEGEND

MW-17 — MONITORING WELL LOCATION

2011 PILOT TESTING LOCATIONS USED IN CROSS SECTION

B119 — SOIL BORING LOCATIONS USED IN CROSS SECTION

GRAY SHADED AREA IS FORMER REFINERY PROPERTY NOT ADDRESSED BY THIS RAP

SITE BOUNDARY

A — A' CROSS SECTION CUT LINE

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SITE MAP SHOWING
MONITORING WELL LOCATIONS
AND CROSS SECTION CUT LINES

FIGURE: 3

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
		RN	KM	08/13/13

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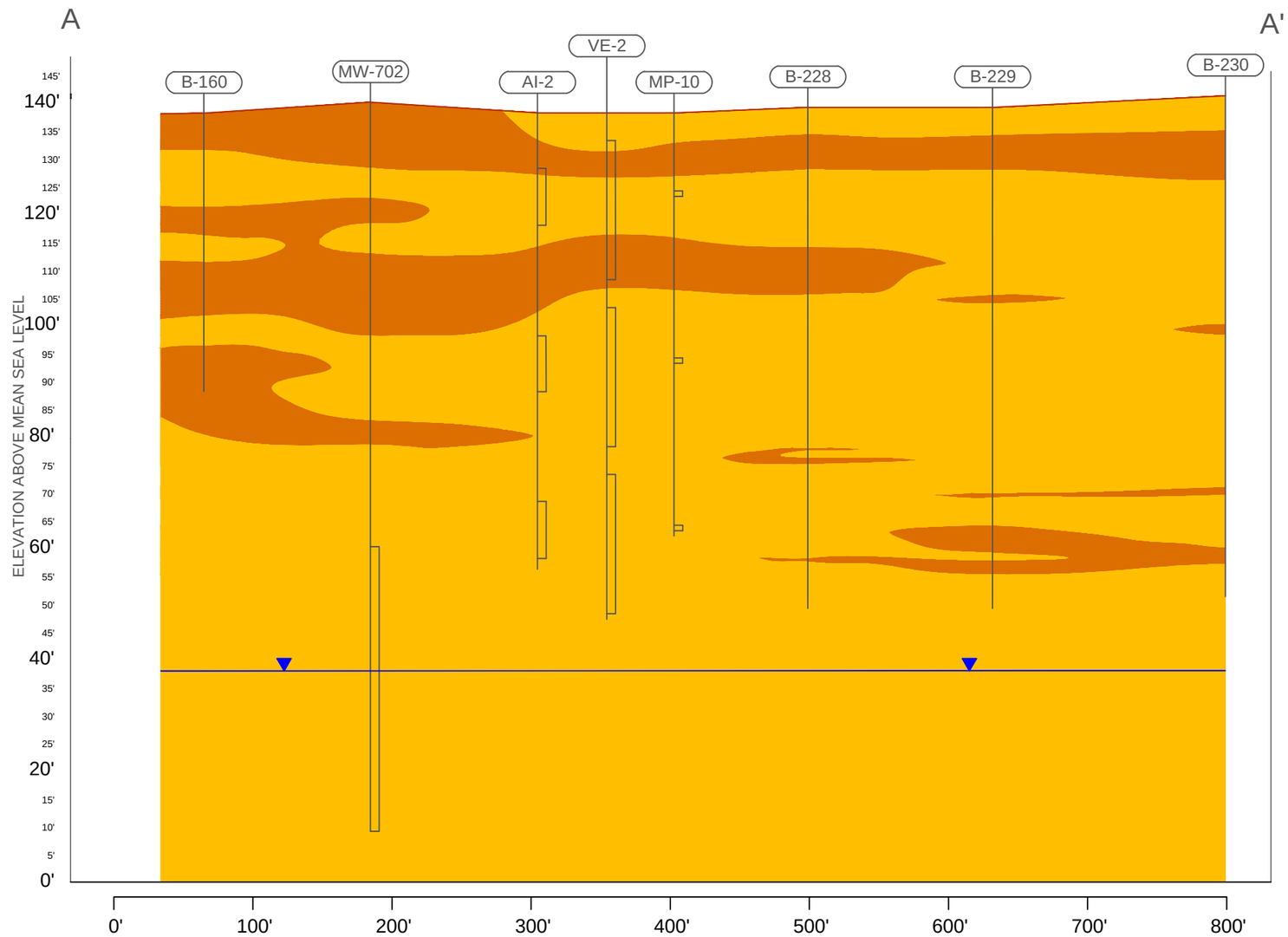

LEGEND

- SILT / CLAY
- SILTY SAND / SAND
- GROUNDWATER ELEVATION
- AI-2 — BORING ID
- GROUND SURFACE
- SCREENED INTERVAL

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GENERALIZED GEOLOGIC CROSS SECTION A-A'

FIGURE: 4

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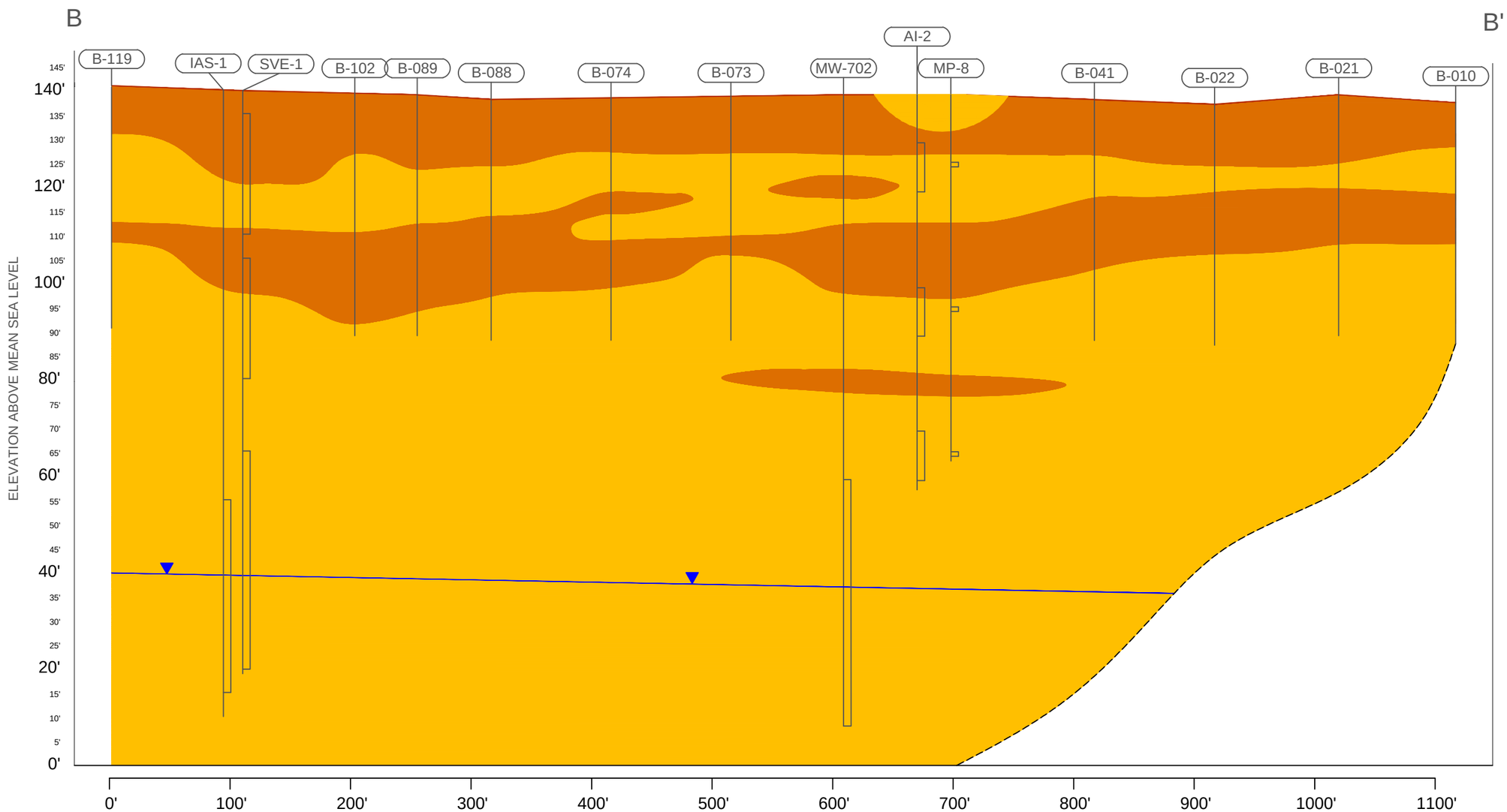

LEGEND

- SILT / CLAY
- SILTY SAND / SAND
- GROUNDWATER ELEVATION
- AI-2 BORING ID
- GROUND SURFACE
- SCREENED INTERVAL

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GENERALIZED GEOLOGIC CROSS SECTION B-B'

FIGURE: 5

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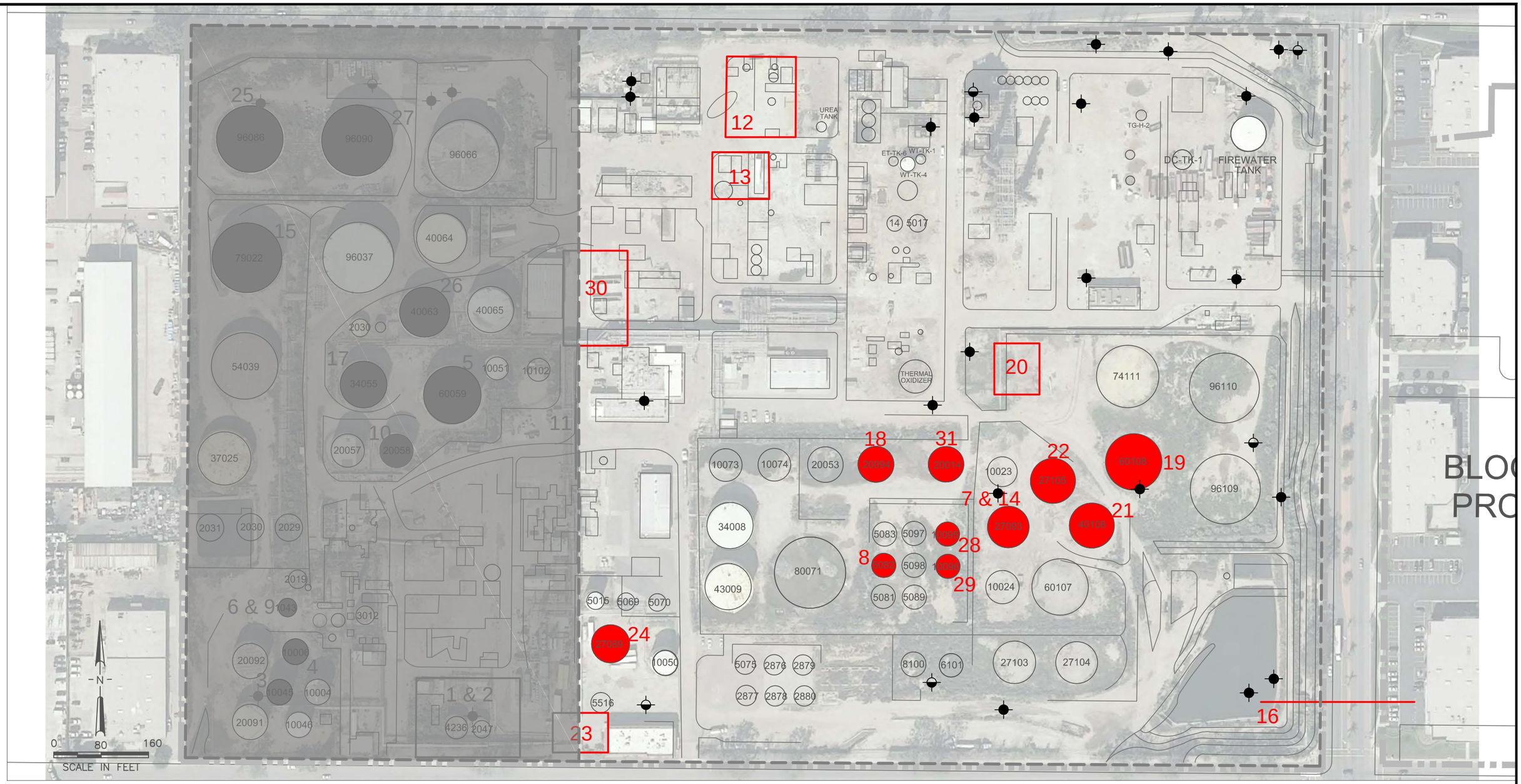

LEGEND

2 Location and ID Number of Documented or Suspected Release (See Table I)

27103 AST ID Number

Underground Pipeline

GRAY SHADED AREA IS FORMER REFINERY PROPERTY NOT ADDRESSED BY THIS RAP

APPROXIMATE LOCATION OF HISTORIC OIL WELLS PRESUMED ABANDONED, (DOGGR, 2006)

Plugged and Abandoned-Dry Hole

Plugged and Abandoned-Oil

Idle-Oil

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SITE PLAN SHOWING HISTORICAL RELEASES AND SUSPECTED SOURCE AREAS

FIGURE: 6

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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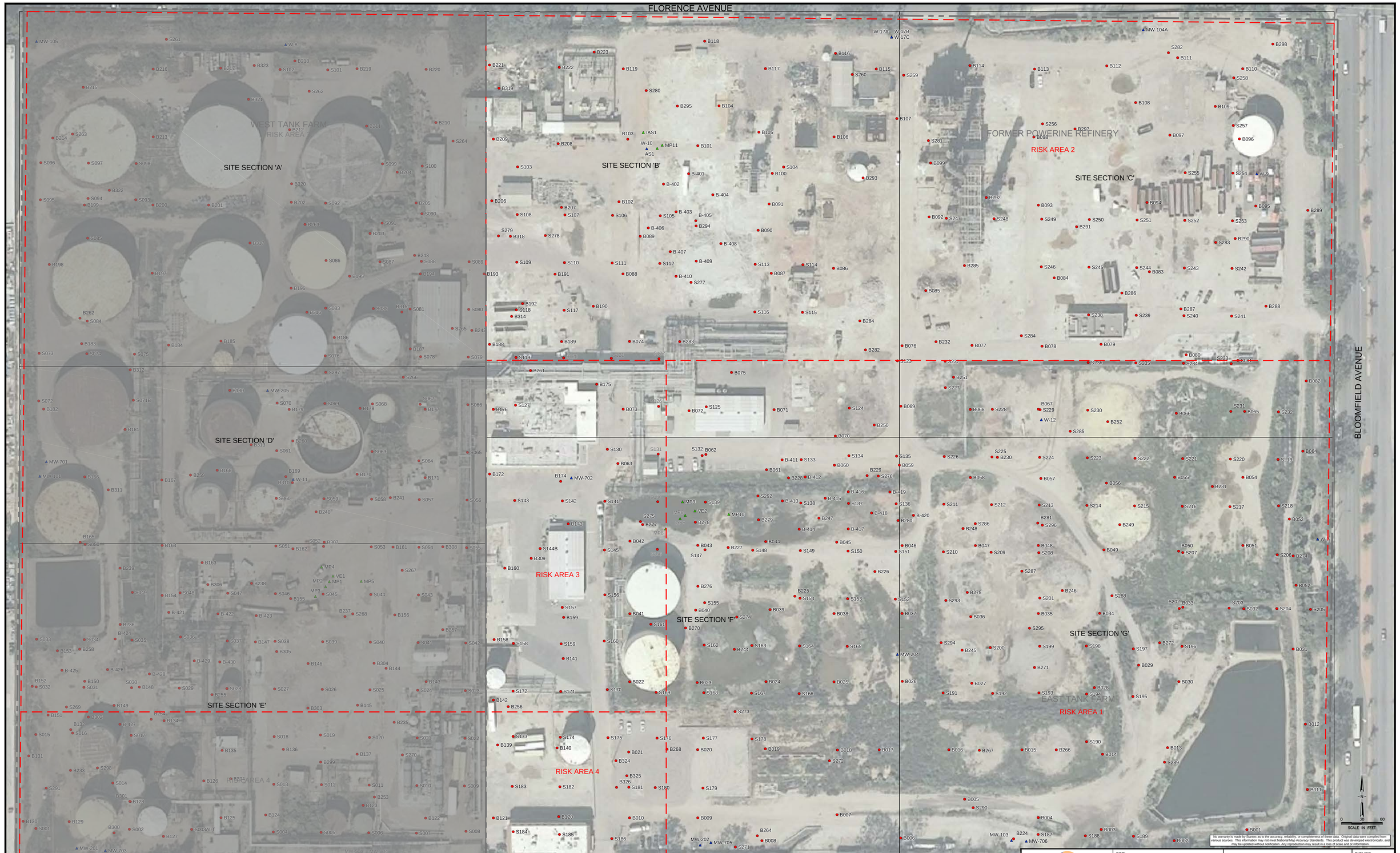
FILEPATH:M:\00_OTHER OFFICES\Redlands\Powerine-Refinery\2013\RAP\Stantec\East\F6 - Historical Releases.dwg|jlieberman|Sep 03, 2013 at 9:18|Layout: Layout2



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LEGEND

- SITE PROPERTY/BOUNDARY LINE
- RISK AREA BOUNDARY
- SAMPLE LOCATION WITH ID
- PILOT TEST WELL LOCATION WITH ID
- MONITORING WELL LOCATION WITH ID
- GRAY SHADED AREA IS FORMER REFINERY PROPERTY NOT ADDRESSED BY THIS RAP

REFERENCE:
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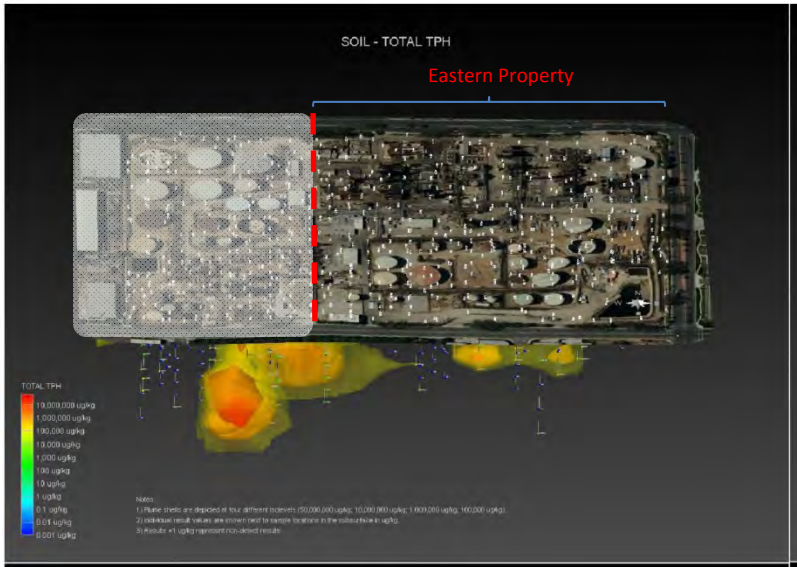
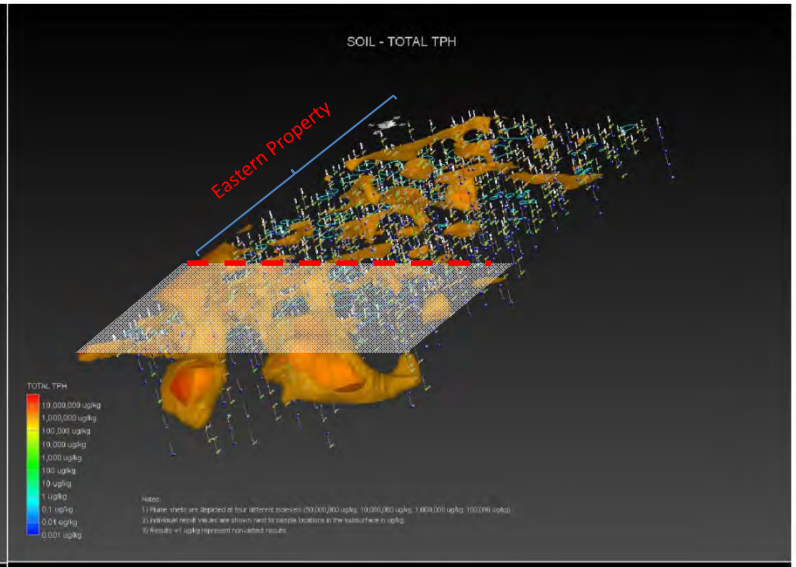
SITE PLAN SHOWING ALL SOIL SAMPLE LOCATIONS

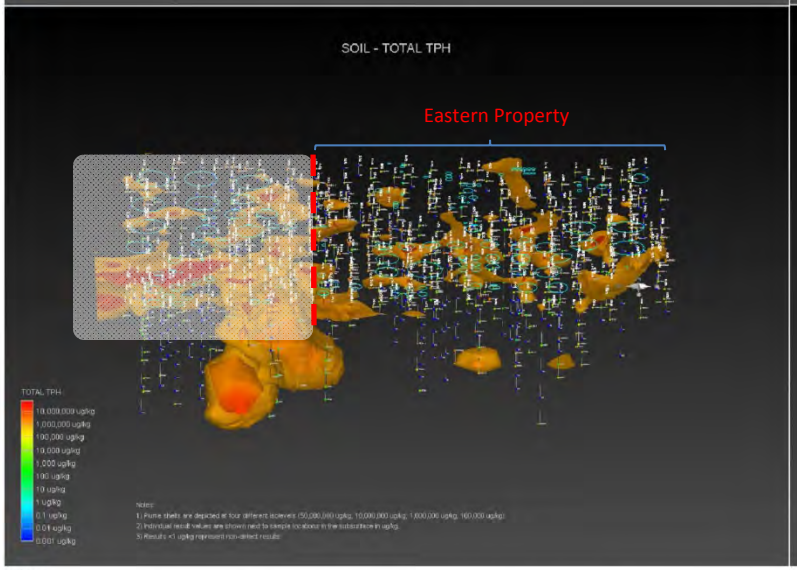
FIGURE: 7

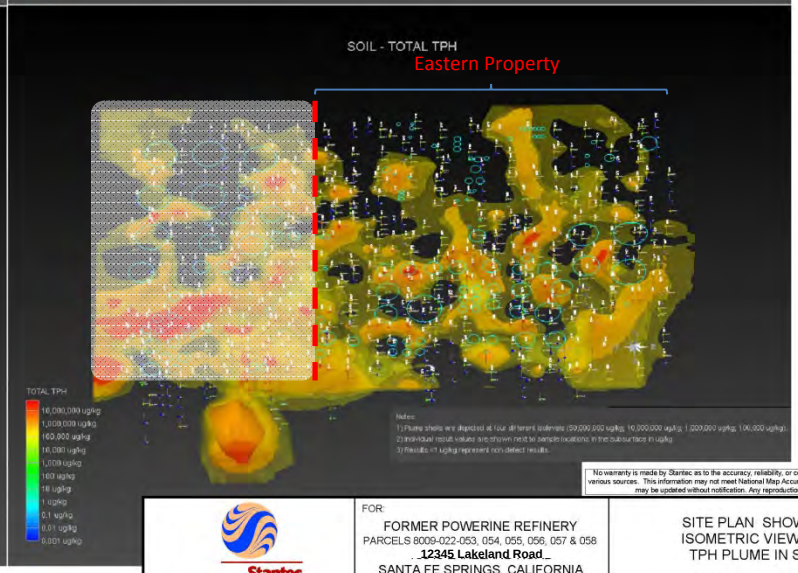
JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
		RN	KM	08/13/13

FILEPATH:M:\00_OTHER OFFICES\Redlands\Powerine Refinery\2013\RAP\Stantec\East\F-Overall-Sample-Location-Exhibit\Overall Sample Location Exhibit.dwg|jleberman|Sep 06, 2013 at 8:46|Layout: INDEX









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SITE PLAN SHOWING ISOMETRIC VIEWS OF TPH PLUME IN SOIL

FIGURE: 8

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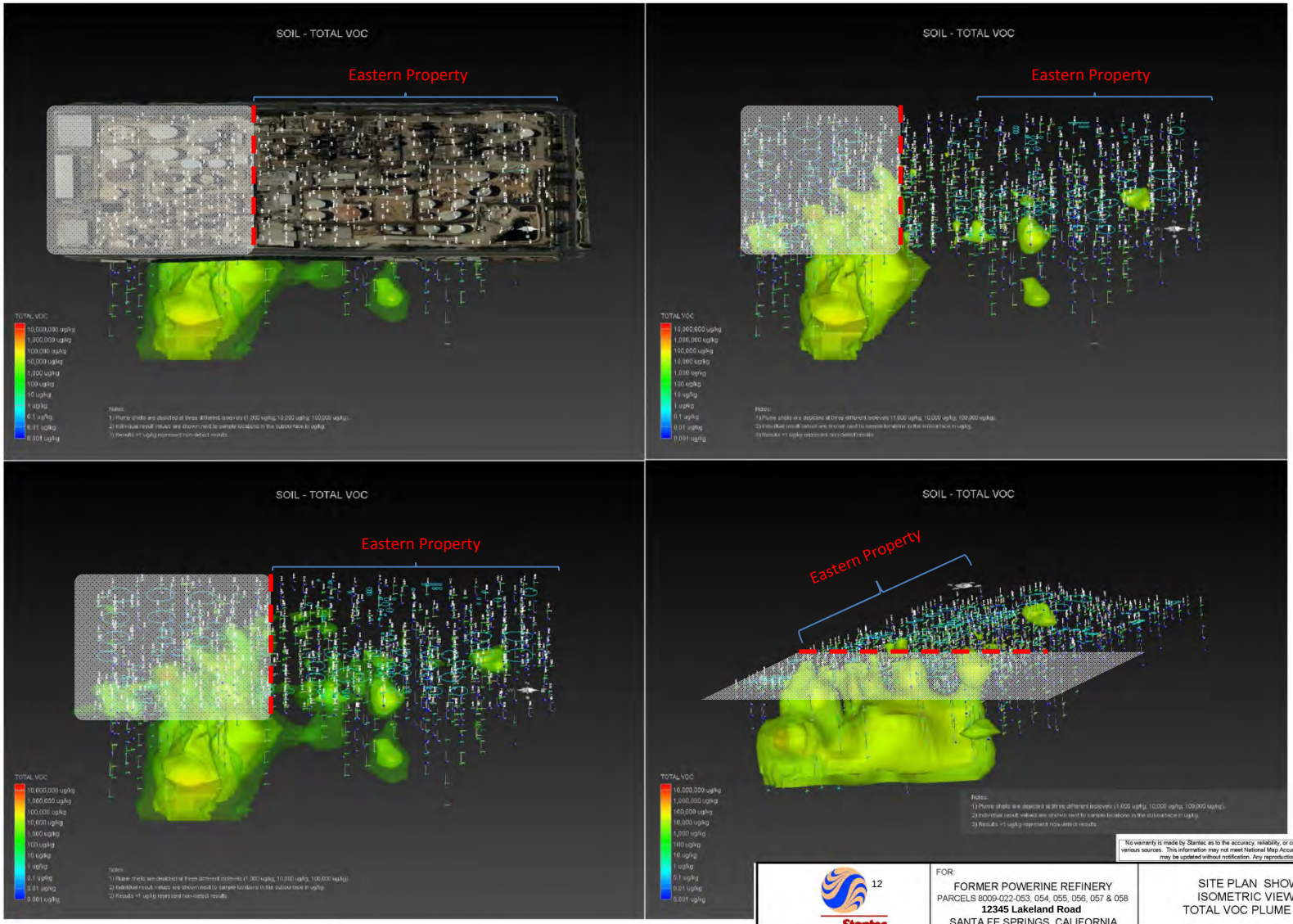
FILEPATH:M:\00_OTHER OFFICES\Redlands\Powerine-Refinery\2013\RAP\Stantec\PLUMES-ISO-VIEWS.dwg|jlieberman|Aug 20, 2013 at 11:39|Layout: F8E



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SITE PLAN SHOWING
ISOMETRIC VIEWS OF
TOTAL VOC PLUME IN SOIL

FIGURE: 9

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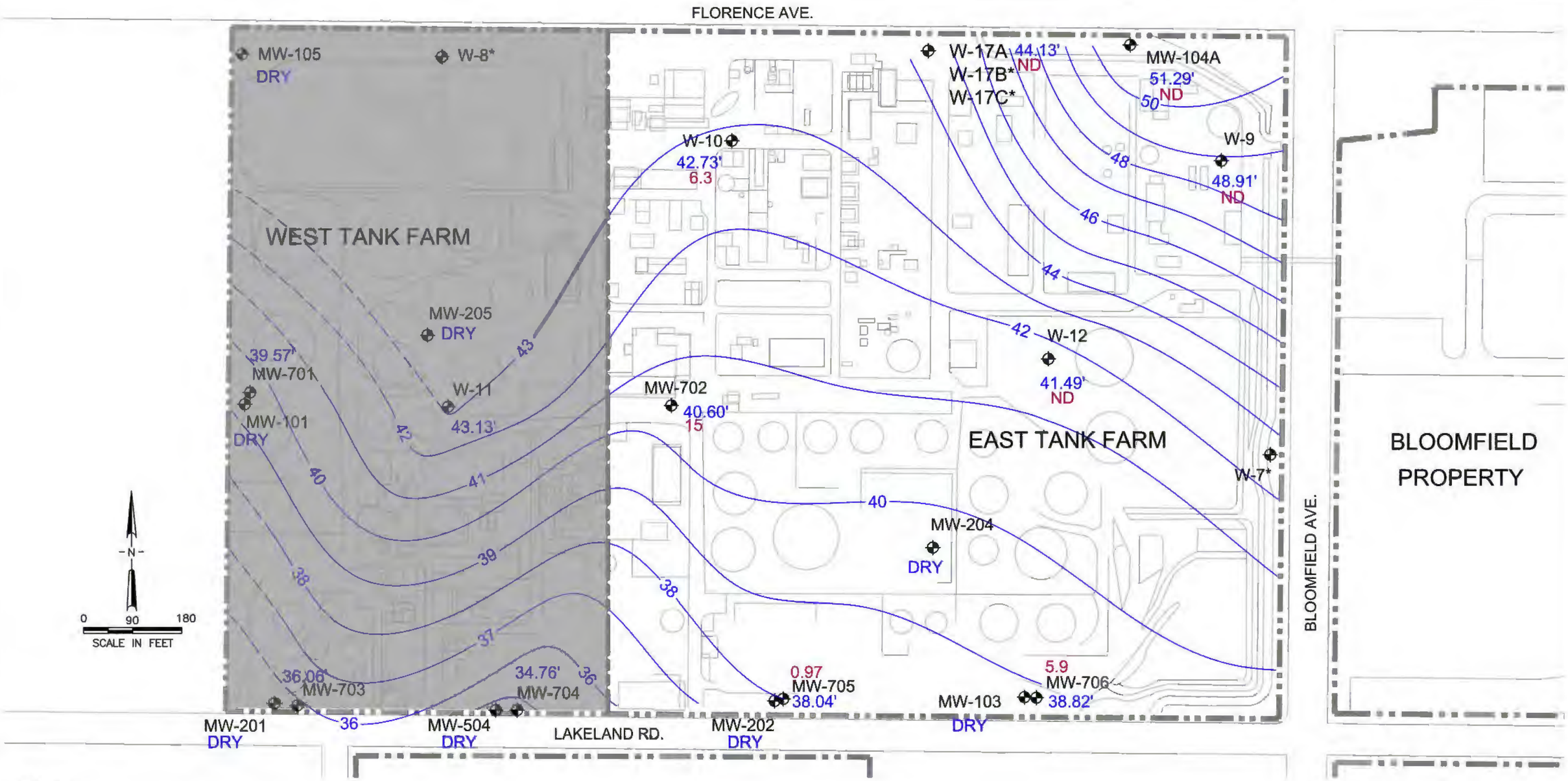
FILEPATH:M:\00_OTHER OFFICES\Redlands\Powerine-Refinery\2013\RAP\Stantec\PLUMES-ISO-VIEWS.dwg|jlieberman|Aug 20, 2013 at 11:39|Layout: F9E



LEGEND

MW-701 ◆	MONITORING WELL LOCATION
45.31'	GROUNDWATER ELEVATION (FT-AMSL)
—39—	GROUNDWATER ELEVATION CONTOUR (FT-AMSL) (CONTOUR INTERVAL 1-FOOT)
DRY	DRY WELL
*	DATA NOT USED IN CALCULATION OF GRADIENT DUE TO WELL SCREEN POSITION
6.3	BENZENE CONCENTRATION (µg/L) TRC = 1 µg/L

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BENZENE CONCENTRATIONS IN GROUNDWATER, Q2 2013
EASTERN PROPERTY WELLS

FIGURE: 10

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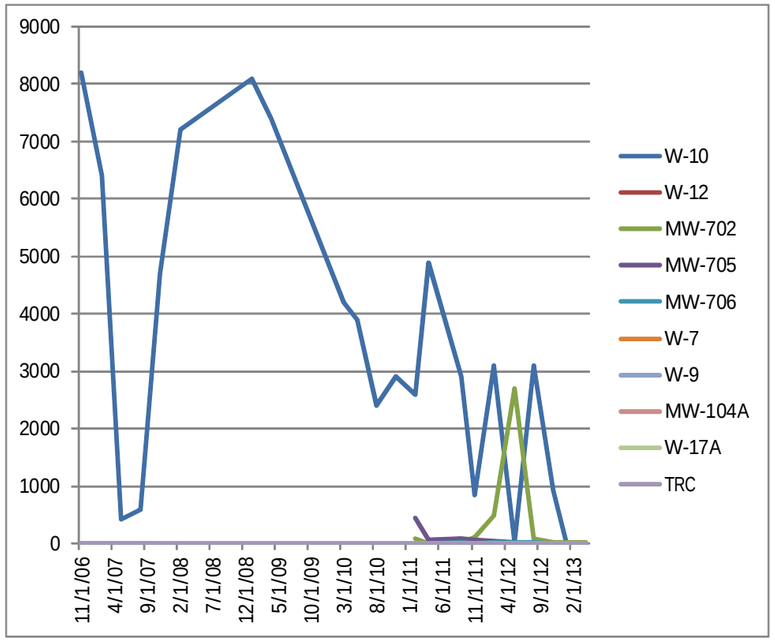
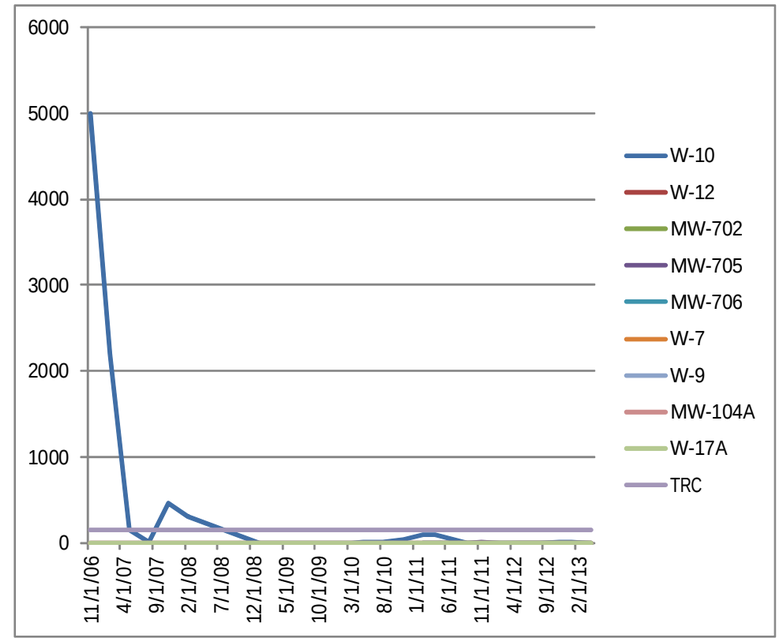
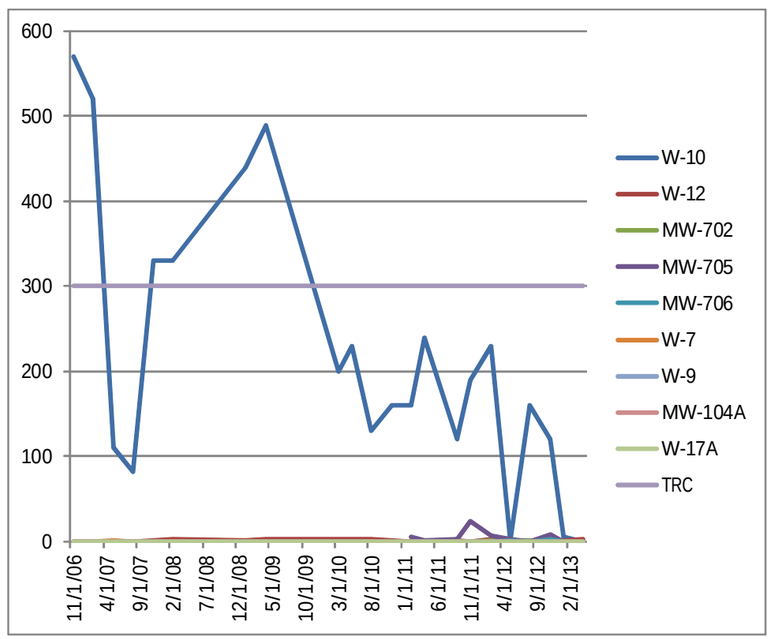
FILEPATH:M:\00_OTHER OFFICES\Redlands\Powerine-Refinery\2013\RAP\Stantec\East\Figure 10 - GW CONTOUR BENZ TPHG.dwg|jlieberman|Sep 24, 2013 at 11:12|Layout: 17 X 11 (2)



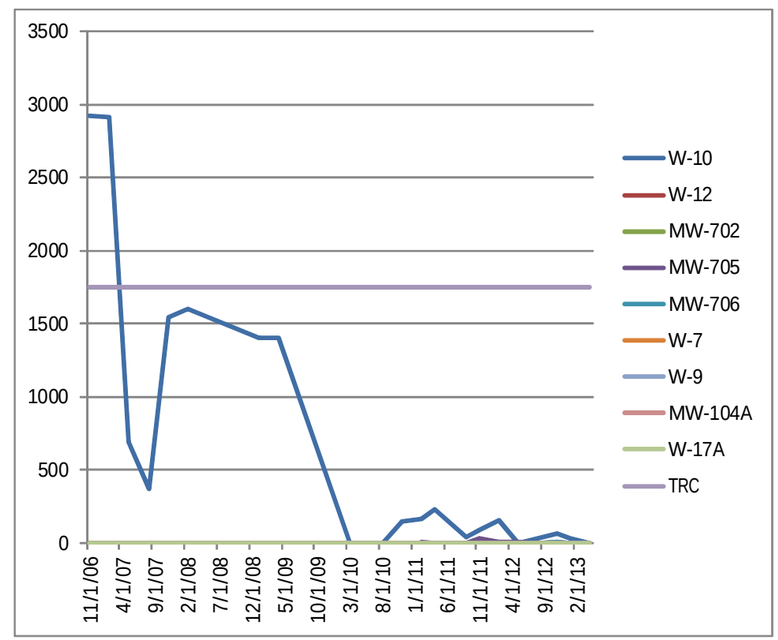
Benzene Concentration Trend (µg/L)
TRC = 1 µg/L



Toluene Concentration Trend (µg/L)
TRC = 150 µg/L



Ethylbenzene Concentration Trend (µg/L)
TRC = 300 µg/L



Xylenes Concentration Trend (µg/L)
TRC = 1,750 µg/L

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BTEX CONCENTRATION TRENDS

FIGURE: 11

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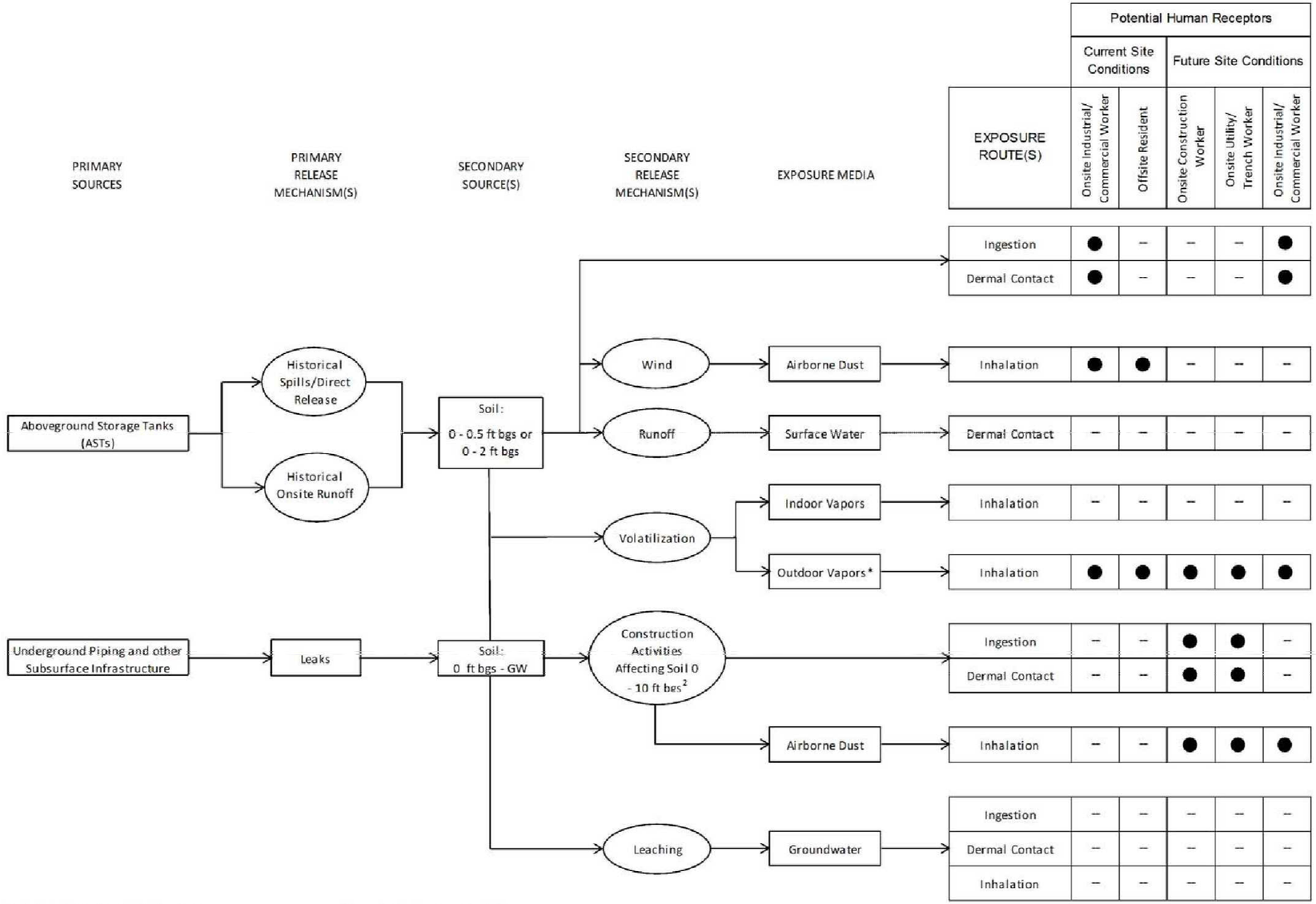

Notes:

● Complete or Potentially Complete Exposure Pathway

– Incomplete or Insignificant Exposure Pathway/Release Mechanism

bgs = below ground surface

* Risk assessment conservatively assumes 100% of exposure time is spent indoors for chronic receptors (industrial/commercial workers and residents).

1 For all areas, the 0 to 0.5 feet and 0 to 2 ft bgs soil sample intervals were subject to a risk-based screening evaluation, and the soil sample interval reflecting the highest risk was conservatively used in the BHHRA.

2 Accounts for excavation activities down to 10 ft bgs and soil redistribution across the site during redevelopment/construction activities

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SITE CONCEPTUAL RISK MODEL

FIGURE: 12

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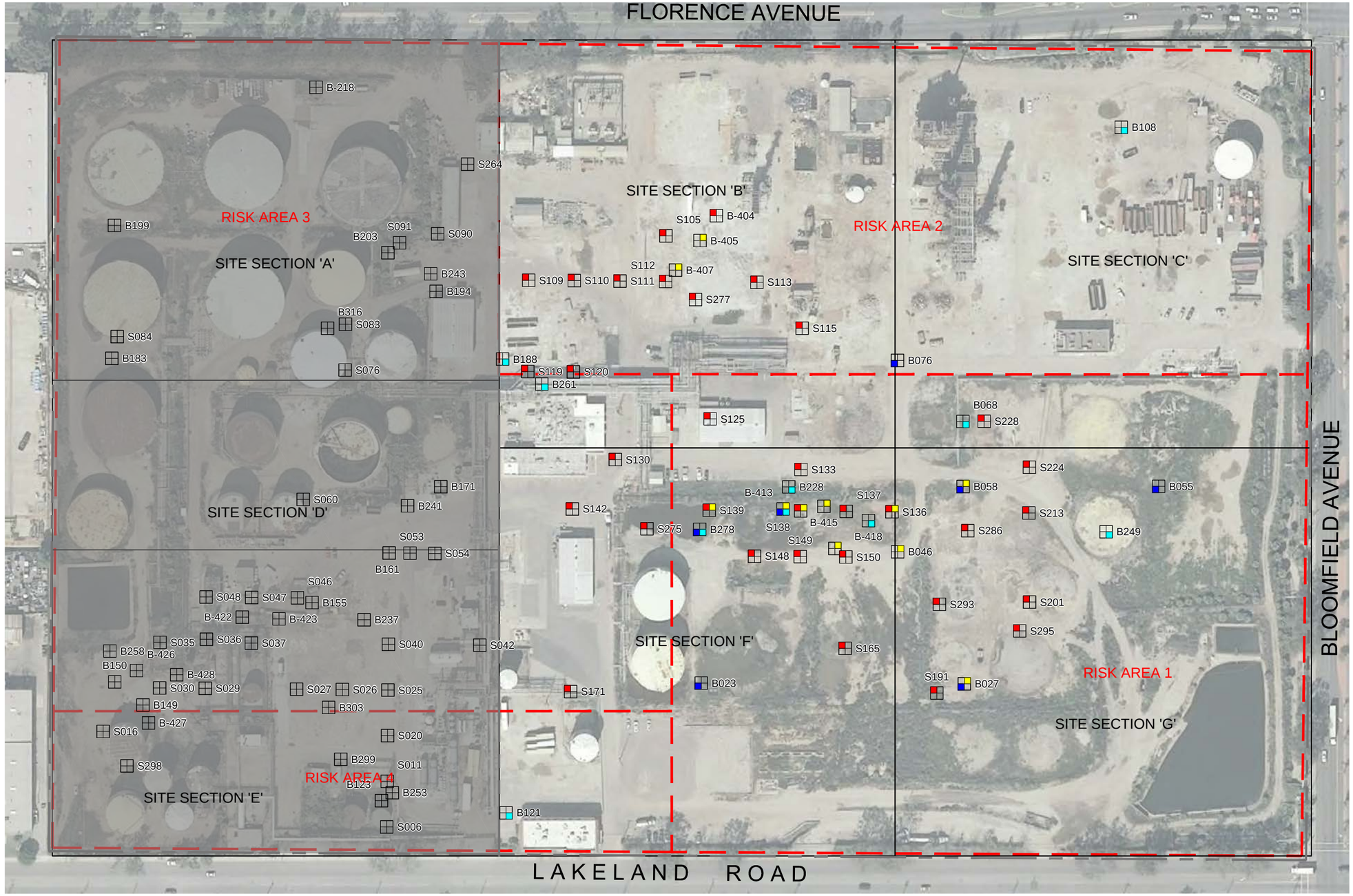

REFERENCE:
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LEGEND:

SITE PROPERTY/BOUNDARY LINE

REDEVELOPMENT AREA LINE

OVER REPORTING LIMIT 0.0' - 1.5' BGS — OVER REPORTING LIMIT 1.5' - 3.0' BGS

S025 SAMPLE ID

OVER REPORTING LIMIT 6.0' - 10.5' BGS — OVER REPORTING LIMIT 3.0' - 6.0' BGS

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SITE PLAN SHOWING
OCCURANCE OF COCs ABOVE TRCs IN
SHALLOW SOIL (0-10 FEET BGS)

FIGURE: 13

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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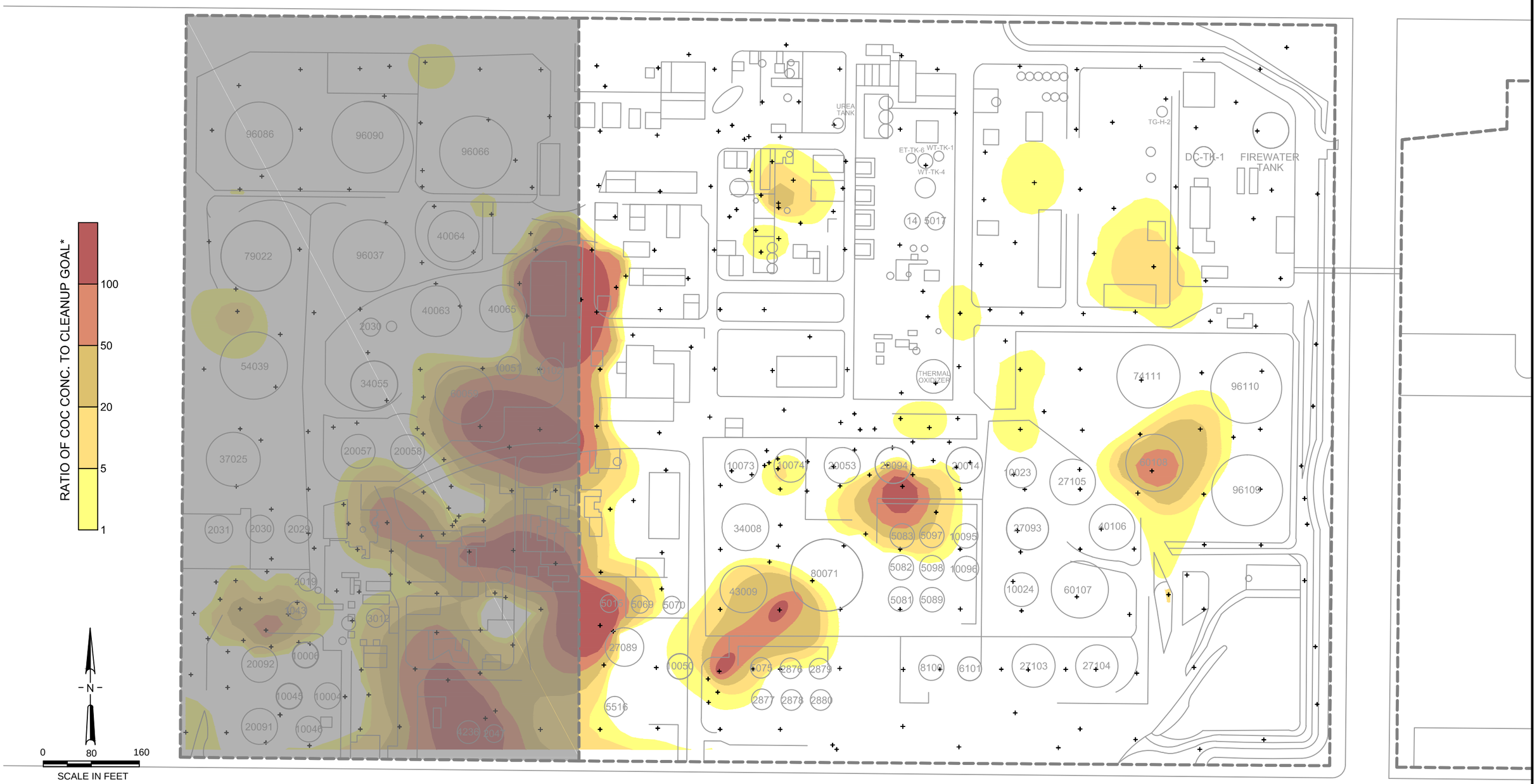
FILEPATH:M:\00_OTHER OFFICES\Redlands\Powerine-Refinery\2013\RAP\Stantec\East\F12_Powerine_ExcvAreas-Set5\1003-001-200_Powerine_ExcvAreas-Set5_Fig12.dwg|jlieberman|Sep 06, 2013 at 8:17|Layout: INDEX



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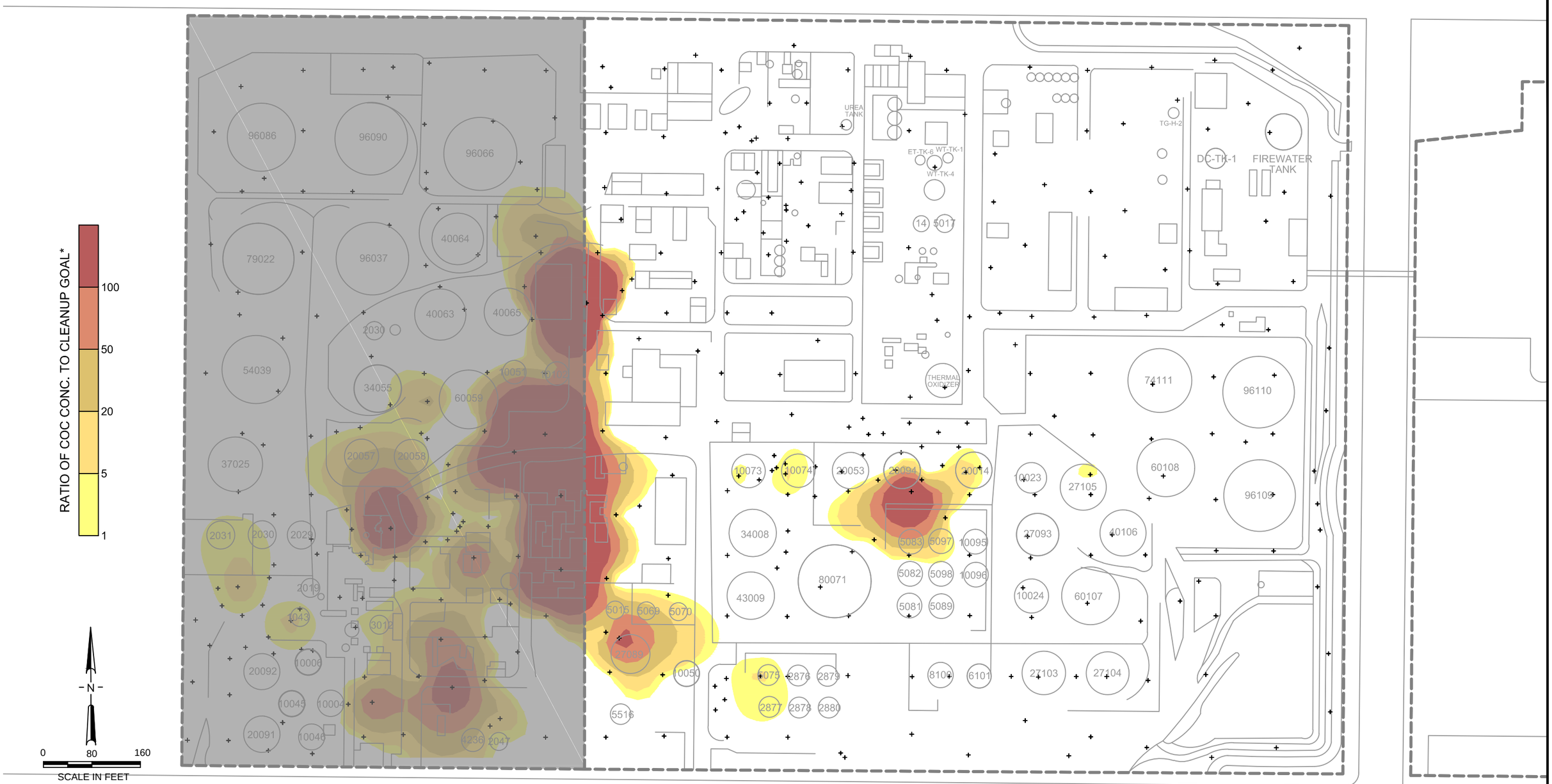
SITE PLAN SHOWING TPHg AND BTEX IN ZONE 1 (0-30 FT BGS) ABOVE DEEP SOIL CLEANUP GOALS

FIGURE: 14

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185803065	JBL	RN	KM	08/13/13



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SITE PLAN SHOWING TPHg AND BTEX IN ZONE 2 (30-60 FT BGS) ABOVE DEEP SOIL CLEANUP GOALS

FIGURE: 15

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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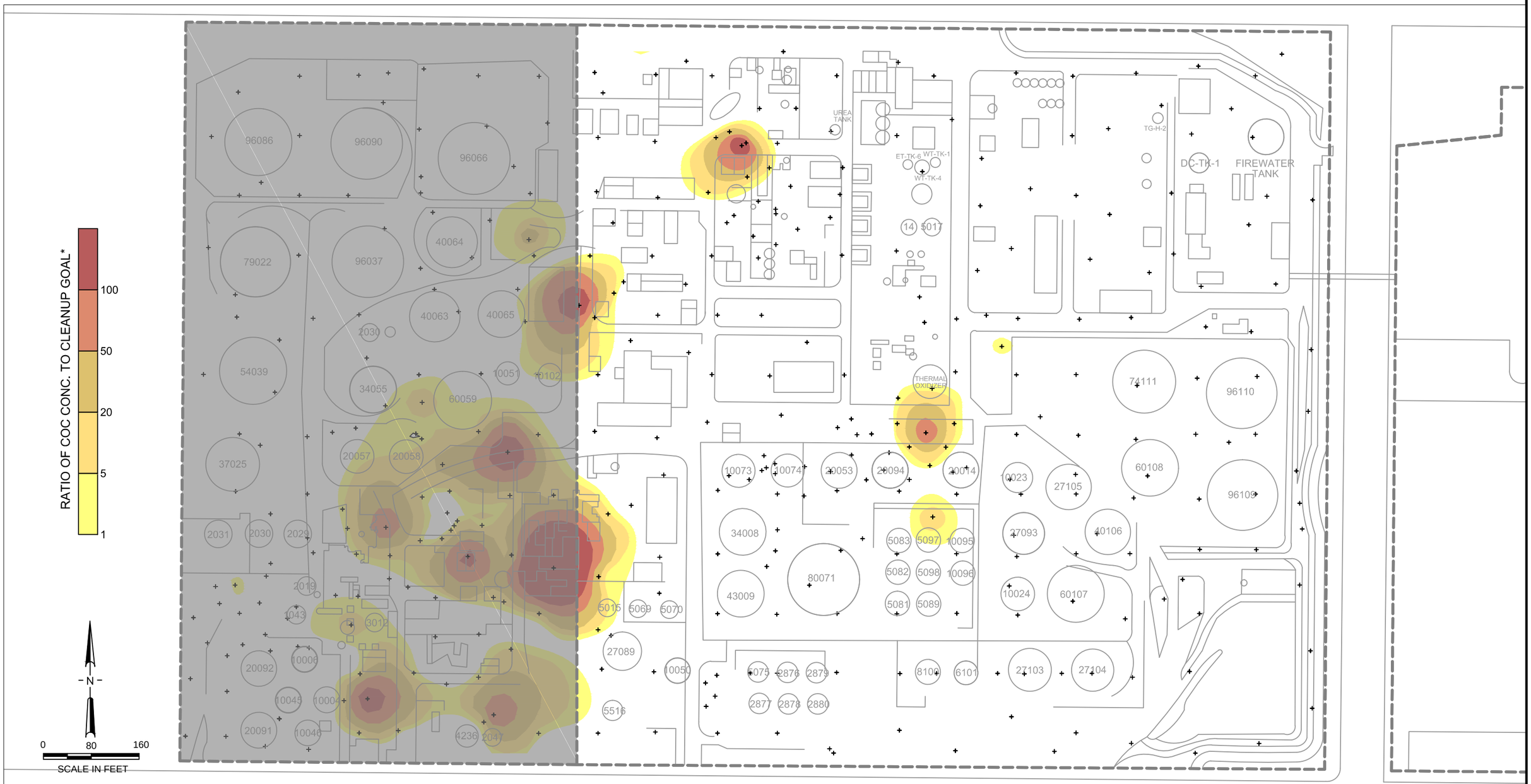
FILEPATH:M:\00_OTHER OFFICES\Redlands\Powerine-Refinery\2013\RAP\Stantec\East\F14-CENCO ZONE2 TPHG_BTEX.dwg|jlieberman|Sep 06, 2013 at 8:20|Layout: Layout1-17 X 11



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SITE PLAN SHOWING TPHg AND BTEX IN ZONE 3 (60 FT BGS TO GW) ABOVE DEEP SOIL CLEANUP GOALS

FIGURE: 16

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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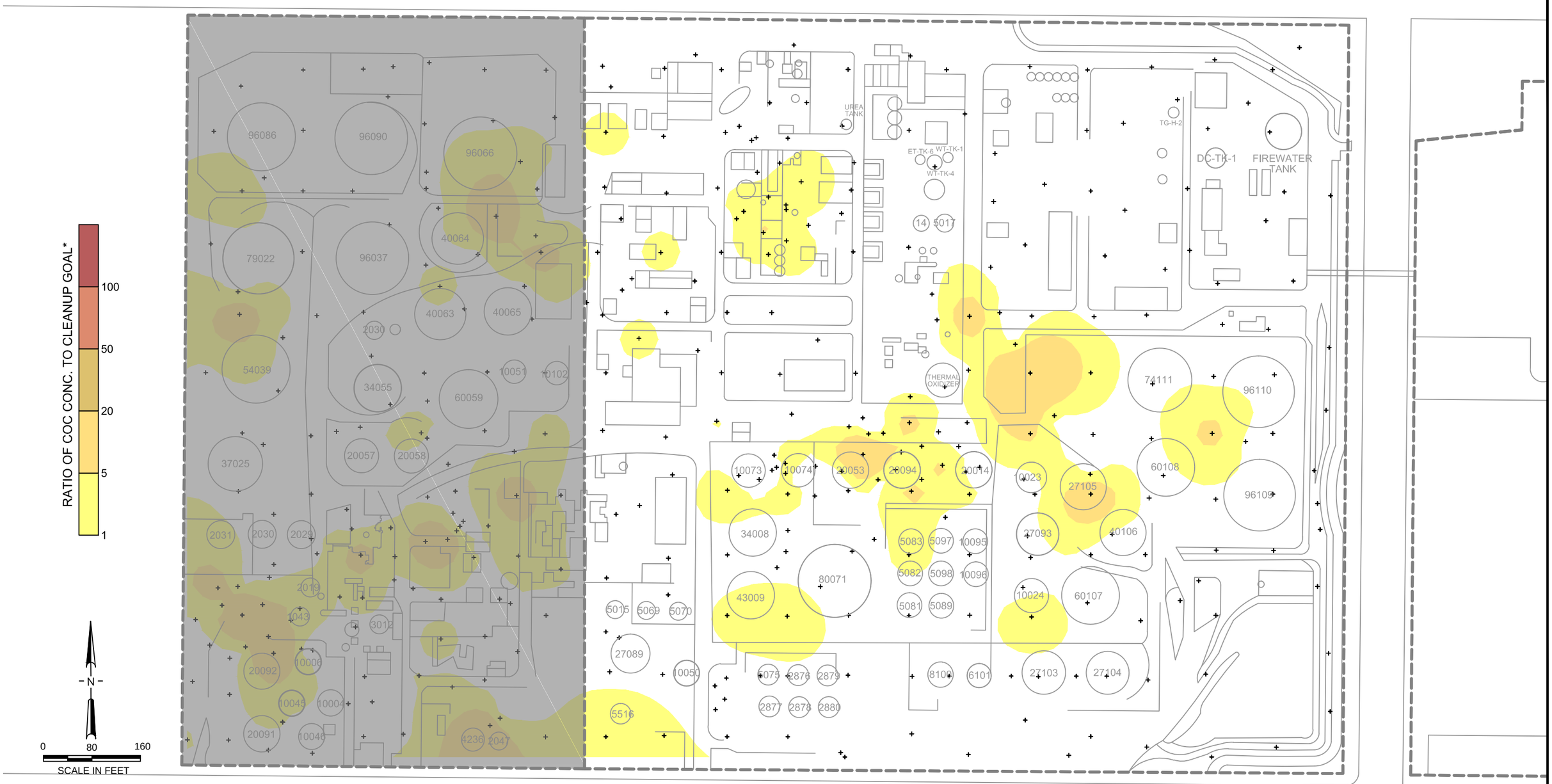

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SITE PLAN SHOWING TPHd
IN ZONE 1 (0-30 FT BGS)
ABOVE DEEP SOIL CLEANUP GOALS

FIGURE: 17

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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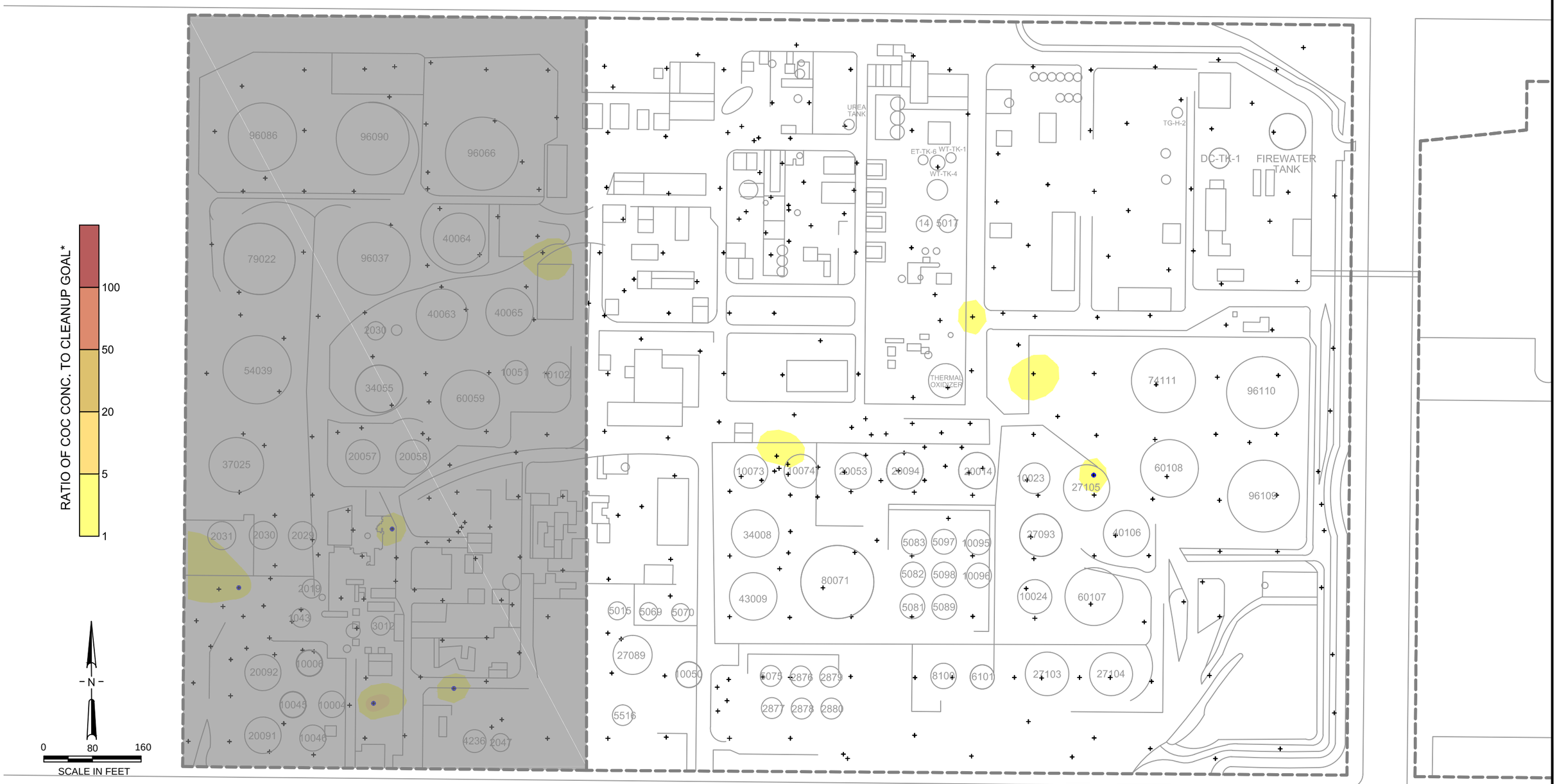
FILEPATH:M:\00_OTHER OFFICES\Redlands\Powerine-Refinery\2013\RAP\Stantec\East\F16-CENCO ZONE1 TPHD.dwg|jlieberman|Sep 06, 2013 at 8:24|Layout: 17 X 11



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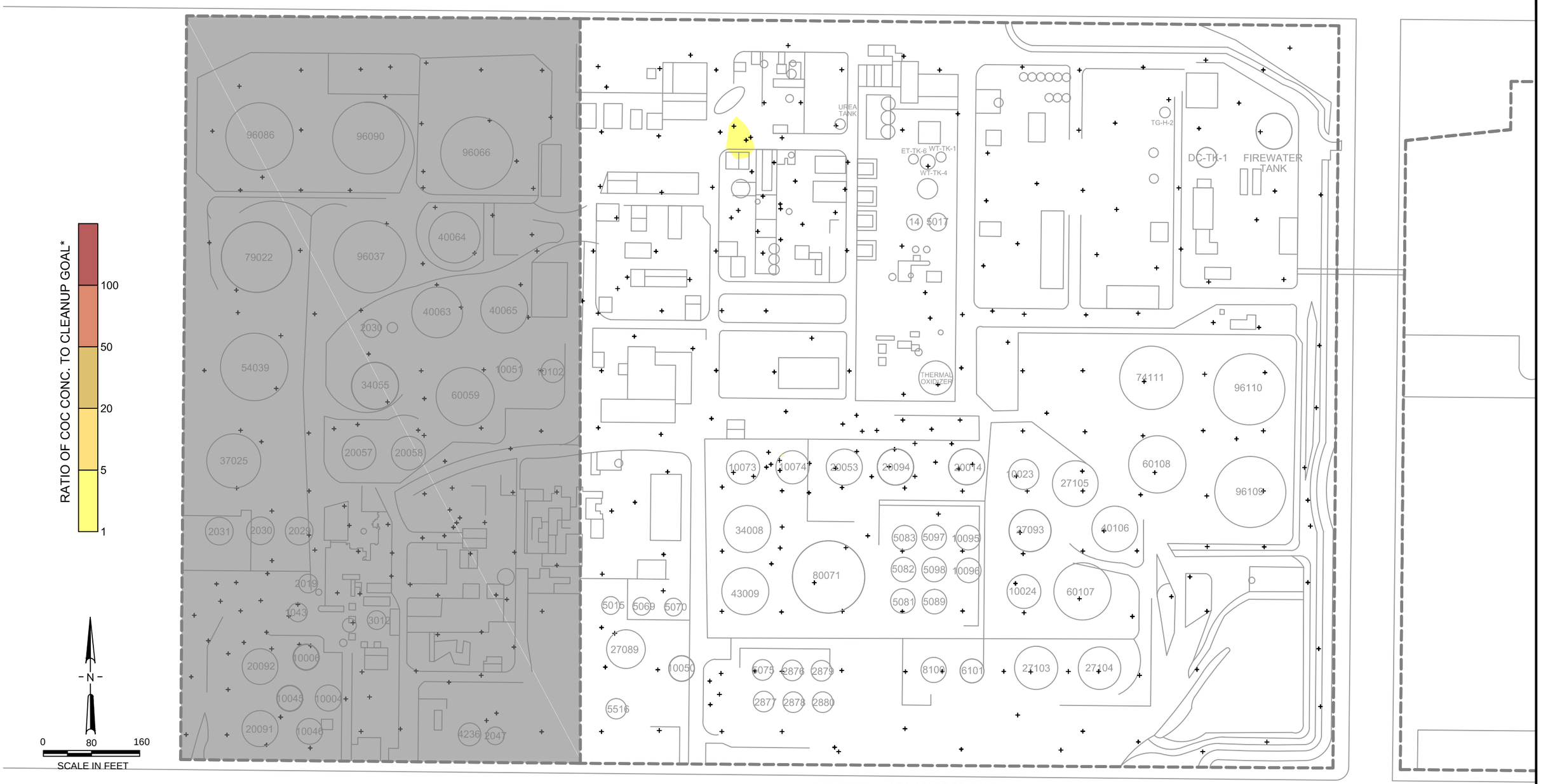
SITE PLAN SHOWING TPHd
IN ZONE 2 (30-60 FT BGS)
ABOVE DEEP SOIL CLEANUP GOALS

FIGURE: 18

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
		RN	KM	08/13/13



*THIS FIGURE PRESENTS NORMALIZED CONCENTRATIONS OF TPHG AND BTEX. FOR THIS DEPTH INTERVAL, THE ISO-CONCENTRATION CONTOUR MAGNITUDE IS BASED ON THE HIGHEST NORMALIZED TPHG OR BTEX CONCENTRATION COMPARED TO THE CORRESPONDING CLEANUP CRITERIA (I.E., COLORED PORTIONS OF THE SITE INDICATE EXCEEDENCES OF THE CLEANUP GOALS IN THAT DEPTH HORIZON).

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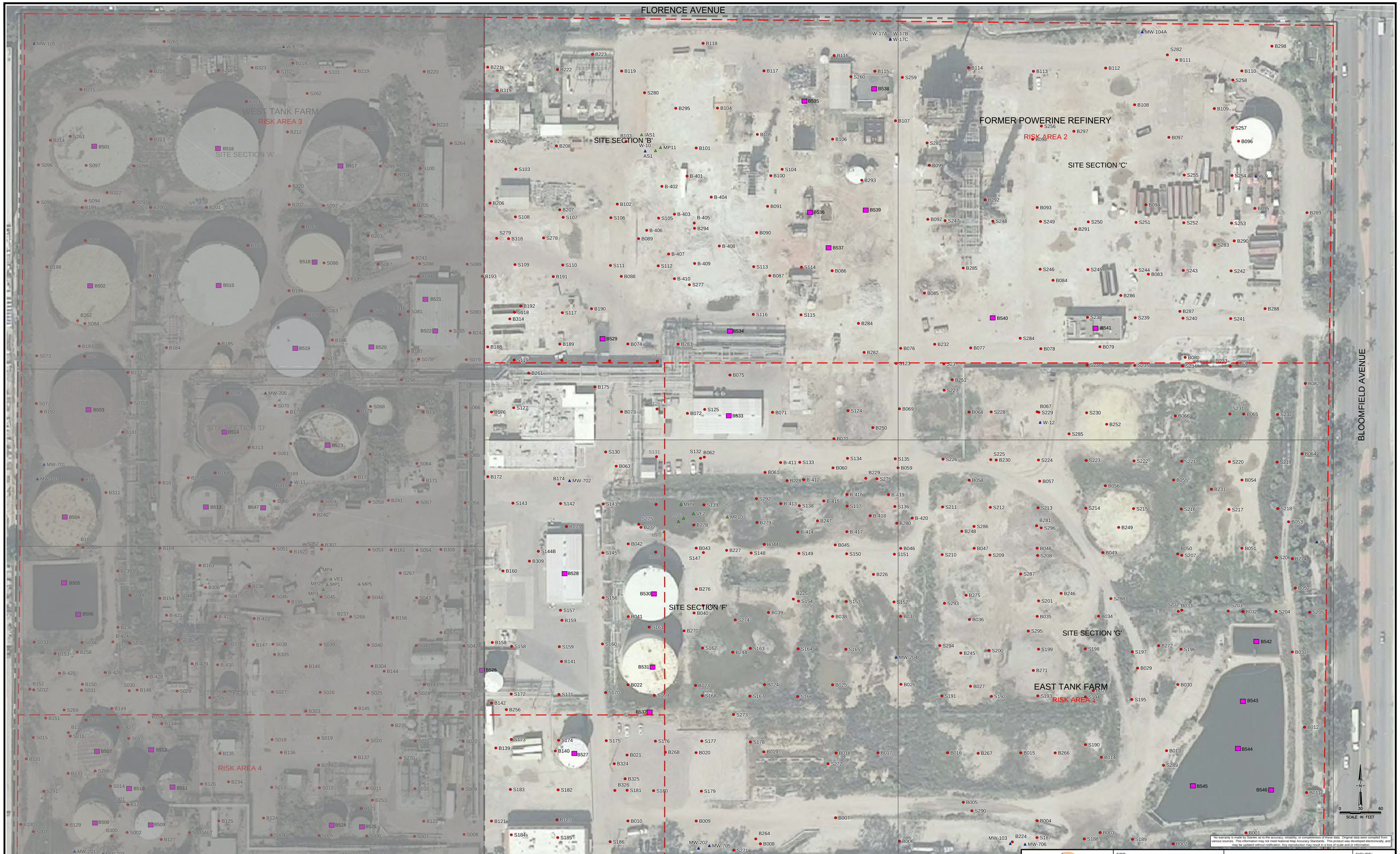
12345 LAKELAND ROAD
SANTA FE SPRINGS, CALIFORNIA

SITE PLAN SHOWING TPHd
IN ZONE 3 (60 FT BGS TO GW)
ABOVE DEEP SOIL CLEANUP GOALS

FIGURE: 19

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185803065	JBL	RN	KM	08/13/13

FILEPATH:M:\00_OTHER OFFICES\Redlands\Powerine-Refinery\2013\RAP\Stantec\East\F18-CENCO ZONE3 TPHD.dwg|jlieberman|Sep 06, 2013 at 8:26|Layout: 17 X 11



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LEGEND

- SITE PROPERTY/BOUNDARY LINE
- REDEVELOPMENT AREA LINE
- B501 PROPOSED SUPPLEMENTAL SAMPLE LOCATION WITH ID
- S010 SAMPLE LOCATION WITH ID
- AS1 PILOT TEST WELL LOCATION WITH ID
- MW-201 MONITORING WELL LOCATION WITH ID
- GRAY SHADED AREA IS FORMER REFINERY PROPERTY NOT ADDRESSED BY THIS RAP

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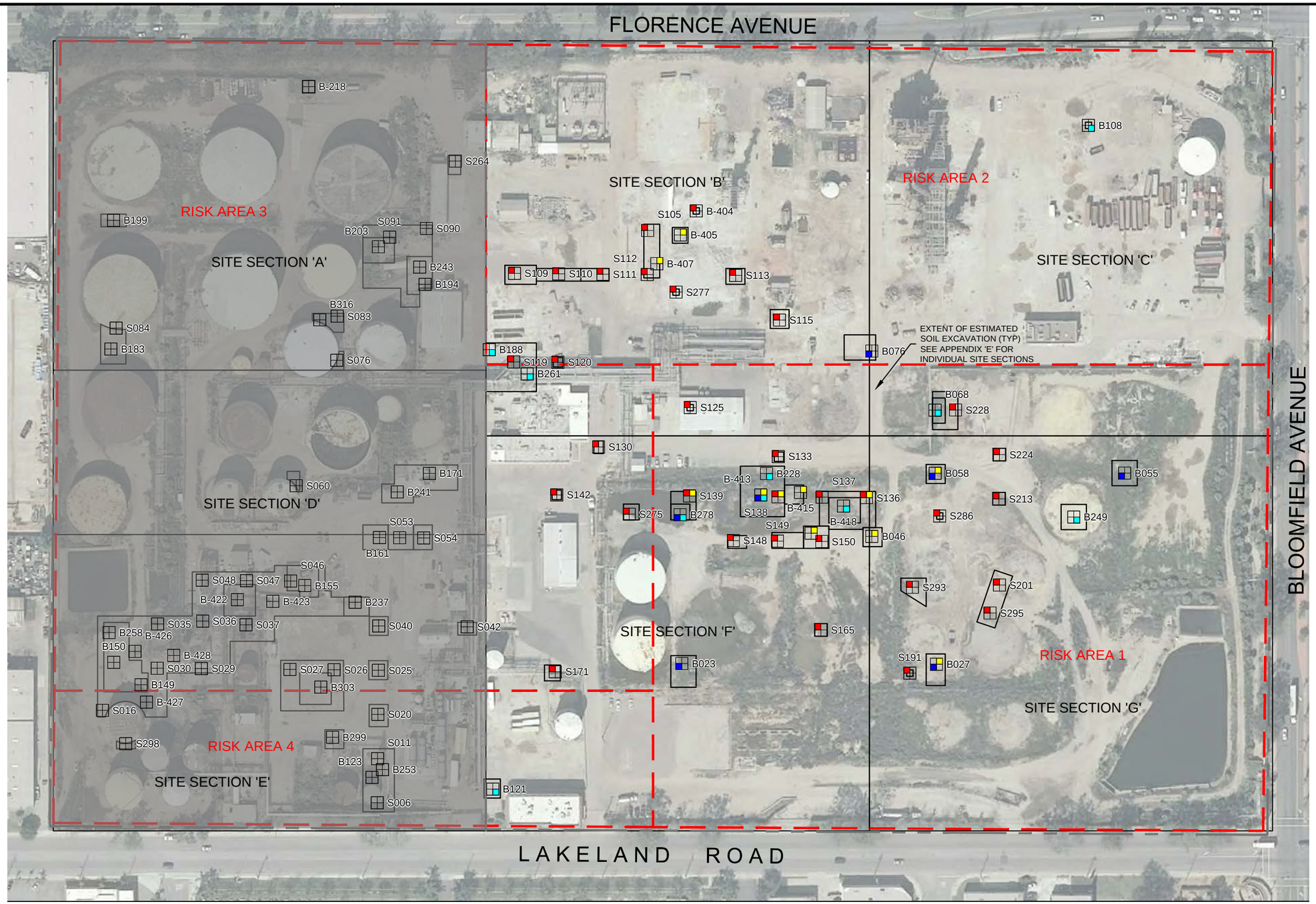
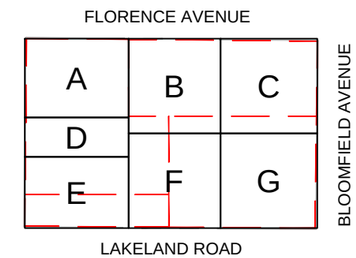
SUPPLEMENTAL SOIL CHARECTERIZATION LOCATIONS

FIGURE: 20

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185803065	JBL	RN	KM	08/13/13

FILEPATH:M:\00_OTHER OFFICES\Redlands\Powerine-Refinery\2013\RAP\Stantec\East\All Sample Locations Base map\Overall Sample Location Exhibit.dwg|jleberman|Sep 06, 2013 at 8:29|Layout: INDEX





KEYMAP FOR SITE SECTIONS

REPORTING LIMITS

ARSENIC (As)	≥	13.0	mg/kg
BENZENE	≥	4.0	mg/kg
DIBENZO (D(a,h)a)	≥	0.6	mg/kg
LEAD (Pb)	≥	320*	mg/kg
TPHg	≥	2,500	mg/kg
TPHd	≥	5,000	mg/kg
TPHmo	≥	10,000	mg/kg

*SEE EXPLANATION IN SECTION 4.2

N

0 70 140

SCALE IN FEET

REFERENCE:

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LEGEND:

SITE PROPERTY/BOUNDARY LINE

REDEVELOPMENT AREA LINE

OVER REPORTING LIMIT 0.0' - 1.5' BGS

OVER REPORTING LIMIT 1.5' - 3.0' BGS

S025 SAMPLE ID

OVER REPORTING LIMIT 6.0' - 10.5' BGS

OVER REPORTING LIMIT 3.0' - 6.0' BGS

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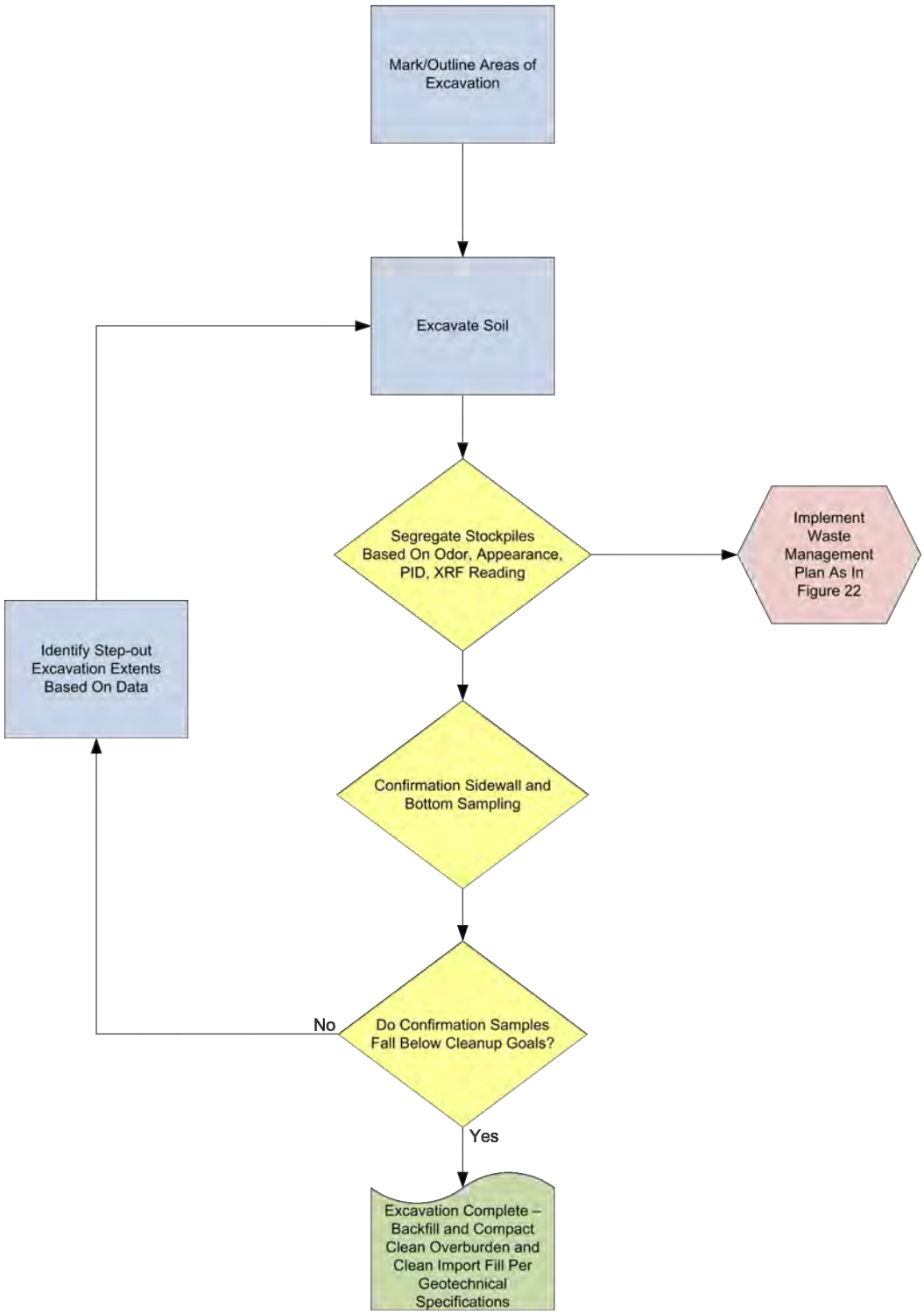
SITE PLAN SHOWING SITE SECTION INDEX AND LOCATIONS OF PROPOSED SHALLOW SOIL EXCAVATION

FIGURE: 21

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185803065	JBL	RN	KM	08/13/13

FILEPATH:M:\00_OTHER OFFICES\Redlands\Powerine-Refinery\2013\RAP\Stantec\East\F20_Powerine_ExcvAreas-Set5\1003-001-200_Powerine_ExcvAreas-Set5_Fig20_Index.dwg|jlieberman|Sep 06, 2013 at 8:30|Layout: INDEX



Notes:
PID – Photoionization Detector
XRF – X-Ray Flourescence Detector

REFERENCE:
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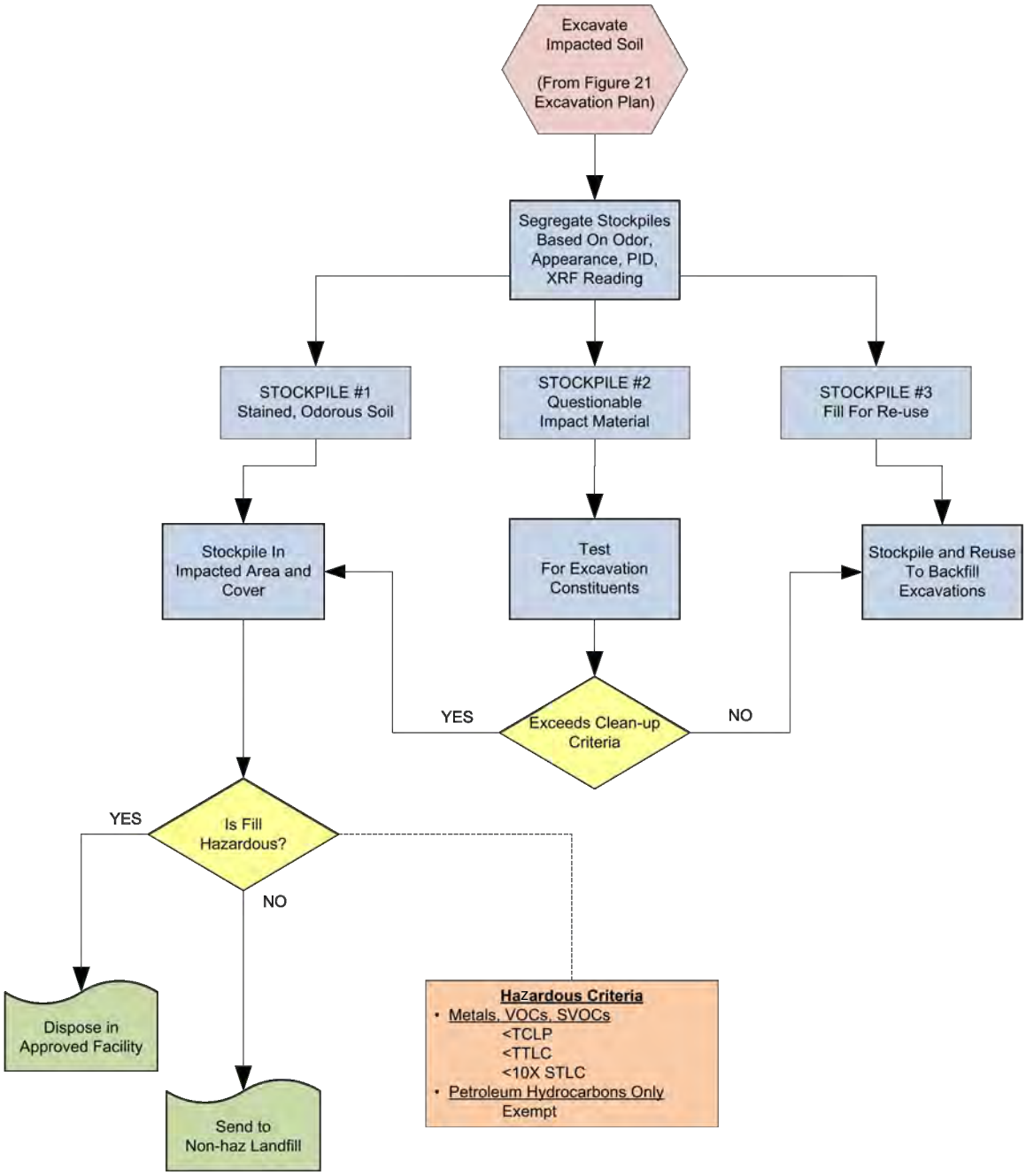
EXCAVATION PLAN

FIGURE: 22

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185803065	JBL	RN	KM	08/13/13



Notes:
PID – Photoionization Detector
XRF – X-Ray Flourescence Detector
TCLP – Toxicity Characteristic Leaching Procedure
TTLC – Total Threshold Limit Concentration
STLC – Soluble Threshold Limit Concentration

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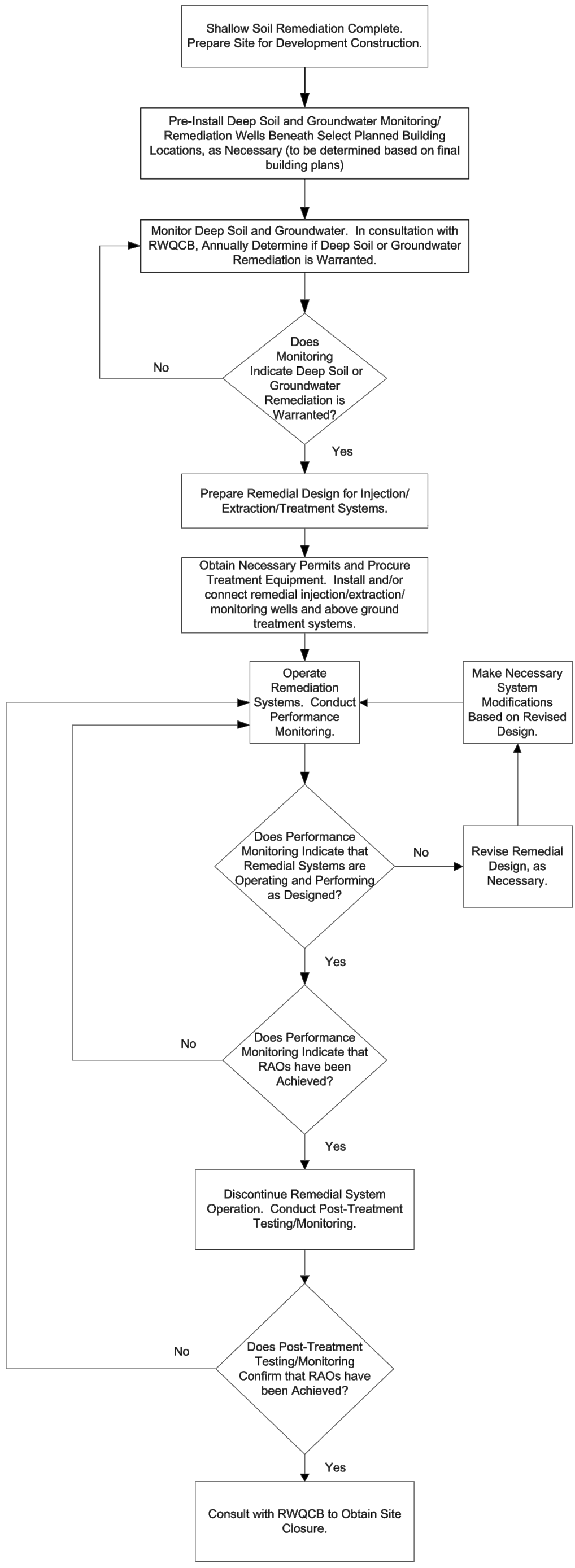
WASTE MANAGEMENT PLAN

FIGURE: 23

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185803065	JBL	RN	KM	08/13/13

FILEPATH:M:\00_OTHER OFFICES\Redlands\Powerine-Refinery\2013\RAP\Stantec\West\20W-21W_21E-22E.dwg|jlieberman|Sep 06, 2013 at 8:32|Layout: 22E



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REMEDIAL ACTION IMPLEMENTATION STRATEGY FOR DEEP SOIL AND GROUNDWATER

FIGURE: 24

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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ID	Task Name	Duration	Start	Finish
1	**Eastern Property RAP Review and Approval**	**44 days**	**Fri 9/27/13**	**Wed 11/27/13**
2	RAP Submittal to RWQCB/DTSC	0 days	Fri 9/27/13	Fri 9/27/13
3	RWQCB Review and Negotiation	44 days	Fri 9/27/13	Wed 11/27/13
4	RWQCB Approval of Work Plan	0 days	Wed 11/27/13	Wed 11/27/13
5				
6	**Supplemental Characterization**	**82 days**	**Thu 6/5/14**	**Fri 9/26/14**
7	Mobilization	3 days	Thu 6/5/14	Tue 6/10/14
8	Drilling & Sample Collection	10 days	Tue 6/10/14	Mon 6/23/14
9	Laboratory, Data Management, Update Risk Calcs	15 days	Tue 6/17/14	Mon 7/7/14
10	Revise Excavation Designs	4 days	Tue 7/8/14	Fri 7/11/14
11	Prepare Draft Characterization Addendum Report	10 days	Wed 7/9/14	Tue 7/22/14
12	Submit Characterization Addendum Report to RWQCB	0 days	Tue 7/29/14	Tue 7/29/14
13	RWQCB Review of Characterization Addendum Report	43 days	Wed 7/30/14	Fri 9/26/14
14	RWQCB Approval of Characterization Addendum Report	0 days	Fri 9/26/14	Fri 9/26/14
15				
16	**Development Plan Approval**	**43 days**	**Wed 4/2/14**	**Mon 6/2/14**
17	Draft Development Plans submitted	0 days	Wed 4/2/14	Wed 4/2/14
18	Development Plan Review	43 days	Wed 4/2/14	Fri 5/30/14
19	Development Plan Approved	0 days	Mon 6/2/14	Mon 6/2/14
20				
21	**Property Acquired**	0 days	Wed 1/15/14	Wed 1/15/14
22				
23	**Demolition**	**109 days**	**Wed 1/15/14**	**Mon 6/16/14**
24	Aboveground Structure Demolition	65 days	Wed 1/15/14	Tue 4/15/14
25	Below Ground Structure Demolition	44 days	Wed 4/16/14	Mon 6/16/14
26				
27	**Shallow Soil Remediation**	**130 days**	**Thu 6/12/14**	**Wed 12/10/14**
28	**Contractor Preparations**	**22 days**	**Thu 6/12/14**	**Mon 7/14/14**
29	Complete Necessary Plans	10 days	Thu 6/12/14	Thu 6/26/14
30	City Plan Check	12 days	Thu 6/26/14	Mon 7/14/14
31	**Site Surveys**	**4 days**	**Tue 7/8/14**	**Mon 7/14/14**
32	Survey/Establish Site Control	3 days	Wed 7/9/14	Mon 7/14/14
33	Utility Survey	4 days	Tue 7/8/14	Mon 7/14/14
34	**Shallow Soil Excavation**	**108 days**	**Mon 7/14/14**	**Wed 12/10/14**
35	Mobilization	3 days	Mon 7/14/14	Wed 7/16/14
36	Build SWPPP Measures & Stockpile Areas	2 days	Thu 7/17/14	Fri 7/18/14
37	Excavation, Off-Site Disposal, Site Restoration	40 days	Mon 7/21/14	Fri 9/12/14
38	Confirmation Testing	40 days	Mon 7/28/14	Fri 9/19/14
39	Data evaluation	15 days	Mon 9/8/14	Fri 9/26/14
40	Prepare Shallow Soil Closure Request	10 days	Mon 9/29/14	Fri 10/10/14
41	Submit Shallow Soil Closure Request to RWQCB	0 days	Fri 10/10/14	Fri 10/10/14
42	RWQCB Review of Closure Request	43 days	Mon 10/13/14	Wed 12/10/14
43	RWQCB Approval of Closure Request	0 days	Wed 12/10/14	Wed 12/10/14
44				
45	**Contingency Deep Soil and Groundwater Remediation Subsurface Infrastructure Installation**	**163 days**	**Wed 4/2/14**	**Fri 11/14/14**
46	Contingency Preliminary System Design	35 days	Wed 4/2/14	Tue 5/20/14
47	Submit System Design to RWQCB	0 days	Tue 5/20/14	Tue 5/20/14
48	RWQCB Review of System Design	43 days	Wed 5/21/14	Fri 7/18/14
49	RWQCB Approval of System Design	0 days	Fri 7/18/14	Fri 7/18/14
50	Well Permitting	8 days	Mon 7/21/14	Wed 7/30/14
51	**Well and Process Piping Installation**	**77 days**	**Thu 7/31/14**	**Fri 11/14/14**
52	City Plan Check	15 days	Thu 7/31/14	Wed 8/20/14
53	Mobilization	2 days	Mon 9/15/14	Tue 9/16/14
54	Well Installation	23 days	Wed 9/17/14	Fri 10/17/14
55	Subsurface Piping & Manifold Installation	10 days	Mon 10/20/14	Fri 10/31/14
56	System Testing	10 days	Mon 11/3/14	Fri 11/14/14
57				
58	**Groundwater Monitoring**	600 days	Mon 11/17/14	Fri 3/3/17

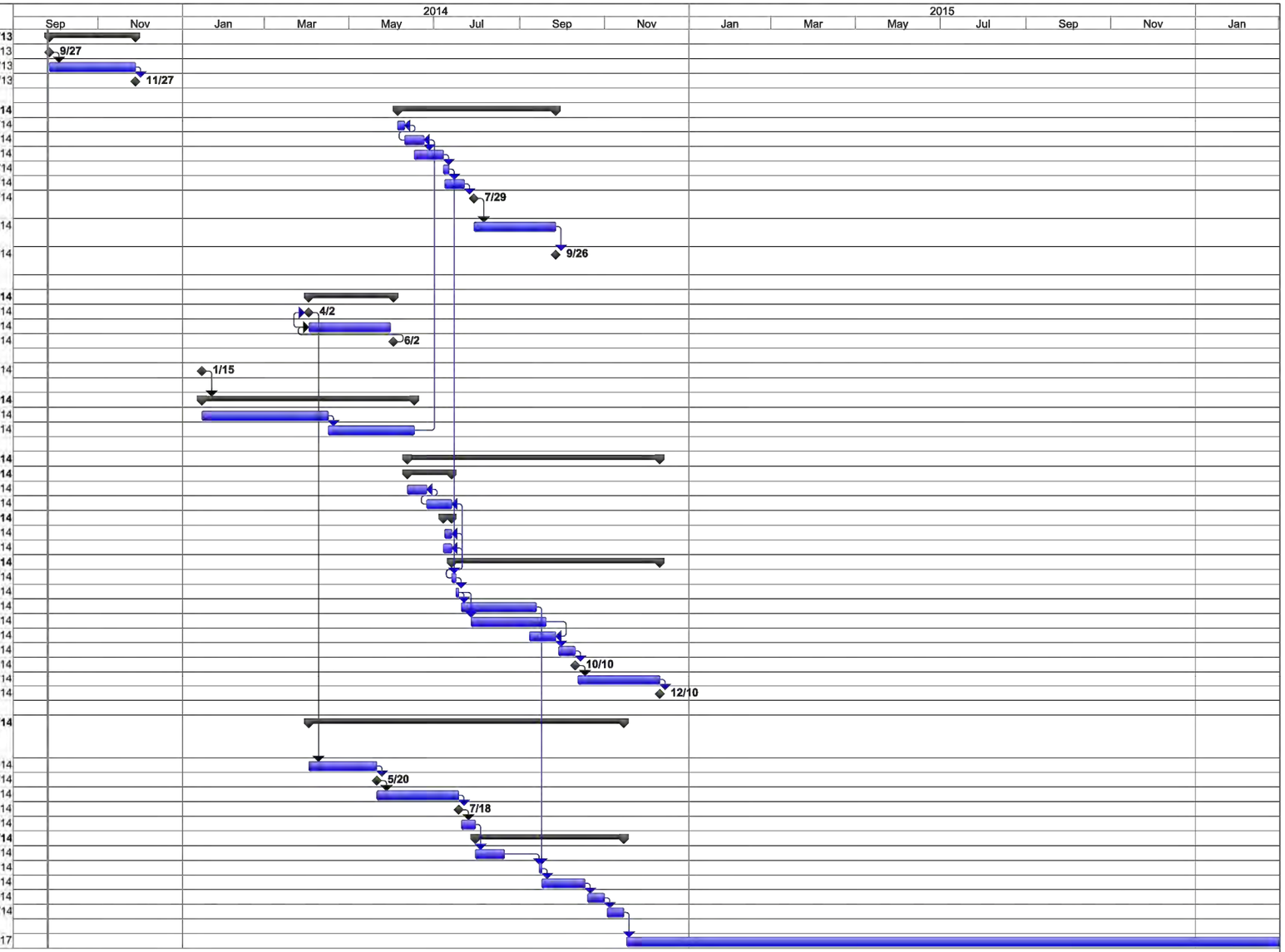

Figure 29 - Project Schedule

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Progress | Deadline

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SANTA FE SPRINGS, CALIFORNIA

PROJECT SCHEDULE

FIGURE: 25

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185803065	JBL	RN	KM	08/13/13

APPENDIX A

SUPPORTING SOIL DATA

Teri L. Copeland, M.S., DABT
Environmental Toxicologist

5737 Kanan Rd. #182, Agoura Hills, CA 91301 * (818) 991-8240 phone (818) 991-8140 fax

Technical Memorandum

To: Jeremy R. Squire, P.E., Senior Engineer
Murex Environmental, Inc.

From: Teri Copeland, M.S., DABT and Kurt Fehling

Date: April 6, 2012

Re: Revised Lead UCLs to Support the RAP for the Former CENCO Refinery, Santa Fe Springs, California

---

In order to support the Remedial Action Plan (RAP) for the former CENCO Refinery site, we have completed additional analysis to support remedial action planning for lead in soil. The components of the analysis, and final results, are described in the remainder of this technical memorandum.

Methods

As requested, the lead data points from each of the four site areas (exposure areas) that are already planned for excavation (i.e., due to the concentrations of other chemicals) were removed from the dataset. This resulted in a new dataset for each of the soil depth interval populations within each of the four exposure areas[1]. The 95% upper confidence limit (UCL) was then calculated for each of the new lead data sets. The lead data file you provided by via email (Lead All Detections.xlsx) was used along and the current version of EPA's ProUCL software.

ProUCL provides a number of UCLs (both parametric and nonparametric) in the model output. The ProUCL output identifies a "potential UCL to use" which is selected by the ProUCL software from a list of normal, lognormal and nonparametric UCLs and is a default value regulatory agencies typically rely upon. The ProUCL "potential UCL" is caveated by EPA's suggestion that the user may want to consult a statistician to select the most defensible UCL. We consulted a statistician and were advised to select the maximum of the 95% Central Limit Theorem (CLT) UCL, 95% Standard Bootstrap UCL, and 95% BCA Bootstrap UCL. The 95% BCA Bootstrap UCL was the maximum value of these three UCLs in all cases.

[1] Area 1: 0-10 ft; Area 2: 0-2 ft, 0-10ft; Area 3: 0-0.5 ft, 0-2 ft, 0-10 ft; and Area 4: 0-2 ft and 0-10 ft.

The statistician-recommended UCLs were compared to the target commercial/industrial California Human Health Screening Level (CHHSL) of 320 mg/kg. The resulting UCLs for all of the new data sets were shown to be below 320 mg/kg[2] with the exception of Area 1, 0-2 feet depth interval. For that data set, one more data point was removed, starting with the maximum remaining concentration (sample S148), which resulted in a 95% BCA Bootstrap UCL that is lower than 320 mg/kg.

Results

The final UCLs are provided in the table below, which includes ProUCL's "potential UCL to use" UCL and the statistician–recommended UCL. All of the statistician-recommended UCLs are below 320 mg/kg. All of the "potential UCL to use" UCLs are below 320 mg/kg, with the exception of Area 1, 0-2 feet depth interval. If one additional sample (S150) is removed from that dataset, the "potential to use" UCL is then below 320 mg/kg.

Area	Soil Depth Interval	95% UCL EPA "Potential UCL To Use"	95% UCL Statistician-Recommended UCL
	Feet	mg/kg	mg/kg
Area 1	0 - 2	343.6*	270.2
	0 - 10	276.7	202.3
Area 2	0 - 2	72.73	86.33
	0 - 10	75.61	59.94
Area 3	0 - 0.5	247.8	196.9
	0 - 2	231.1	291.4
	0 - 10	230	200.2
Area 4	0 - 2	228.9	230.7
	0 - 10	176.5	140.6

* This UCL is not recommended by our statistician. Note: if the next highest sample concentration is removed (S150); the "Potential UCL to use" is reduced to 247.4 mg/kg.

<u>Summary</u>

The 95% UCL for lead in soil exceeded the commercial/industrial CHHSL of 320 mg/kg in some areas of the site. Because, remedial activities are planned for these areas to address COCs other than lead, the UCL for lead was recalculated for each area after removing the samples that are slated for remediation. The resulting lead UCLs were all below the commercial/industrial CHHSL with the

[2] No further action is required by DTSC when the EPC does not exceed the commercial/industrial CHHSL for lead.

exception of the 0 to 2 foot depth interval for Area 1. The lead UCL was once again recalculated with the maximum sample location removed and the resulting lead UCL recommended for use by ProUCL was less than the CHHSL. If the two highest concentrations of lead are removed, then the both the ProUCL-recommended UCL and the statistician-recommended UCL are less than the commercial/industrial CHHSL.

Summary of Upper Confidence Limits for Lead in Soil; 0 to 2 feet and 2 to 10 Feet.*

Area	Depth	ProUCL Recommended UCL	Statistician Recommended UCL	ProUCL Recommended UCL	Statistician Recommended UCL
Area 1	0 - 2 feet	**438.6**	**328.2**	258[a]	200[a]
	2 - 10 feet	200.3	157.4	---	---
Area 2	0 - 2 feet	**427.7**	**358.9**	78.63[b]	90.38[b]
	2 - 10 feet	24.65	20.58	---	---
Area 3	0 - 2 feet	285.3	**918.4**	237.8[c]	299.2[c]
	2 - 10 feet	**2870**	**2234**	317.9[c]	242.1[c]
Area 4	0 - 2 feet	**667.1**	**539.3**	228.9[d]	228.9[d]
	2 - 10 feet	**377.4**	**350.8**	70.71[d]	57.93[d]

*	California Human Health Screening Level for lead for industrial/commercial land use is 320 mg/kg.
a	Area 1 UCLs with samples S148-0 and S150-12 removed.
b	Area 2 UCLs with sample S277-0 removed.
c	Area 3UCLs with sample S037-0 and S037-20 removed.
d	Area 4 UCLs with sample S011-0 and B123-2 removed.
---	No applicable; UCL is below CHHSL of 320 mg/kg.
	Bold values denote those UCLs that exceed the industrial CHHSL for lead.

Table A2
Results of Arsenic Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Arsenic
B005	B005-2	12/8/05	2	3	Area 1	MG/KG	<1.25
B005	B005-5	12/8/05	5	6	Area 1	MG/KG	3.55
B007	B007-2	12/12/05	2	3	Area 1	MG/KG	3.125
B008	B008-2	12/8/05	2	3	Area 1	MG/KG	<1.25
B008	B008-5	12/8/05	5	6	Area 1	MG/KG	3.6875
B009	B009-2	12/9/05	2	3	Area 1	MG/KG	<1.25
B010	B010-2	12/9/05	2	3	Area 4	MG/KG	0.89875
B010	B010-5	12/9/05	5	6	Area 4	MG/KG	3.5625
B011	B011-2	1/9/06	2	3	Area 1	MG/KG	3.9875
B011	B011-5	1/9/06	5	6	Area 1	MG/KG	4.7125
B014	B014-2	12/13/05	2	3	Area 1	MG/KG	6.1125
B014	B014-5	12/13/05	5	6	Area 1	MG/KG	4.7625
B015	B015-2	12/12/05	2	3	Area 1	MG/KG	0.67
B016	B016-2	12/13/05	2	3	Area 1	MG/KG	<1.25
B017	B017-2	12/29/05	2	3	Area 1	MG/KG	<1.25
B018	B018-2	12/29/05	2	3	Area 1	MG/KG	1.825
B018	B018-5	12/29/05	5	6	Area 1	MG/KG	2.3375
B019	B019-2	12/28/05	2	3	Area 1	MG/KG	<1.25
B020	B020-2	12/12/05	2	3	Area 1	MG/KG	<1.25
B021	B021-2	12/28/05	2	3	Area 4	MG/KG	<1.25
B021	B021-5	12/28/05	5	6	Area 4	MG/KG	<1.25
B022	B022-2	12/28/05	2	3	Area 3	MG/KG	<1.25
B023	B023-2	12/28/05	2	3	Area 1	MG/KG	<1.25
B024	B024-2	12/16/05	2	2.5	Area 1	MG/KG	0.8925
B025	B025-2	12/15/05	2	3	Area 1	MG/KG	1.3875
B026	B026-2	12/15/05	2	3	Area 1	MG/KG	3.6875
B027	B027-2	12/14/05	2	3	Area 1	MG/KG	2.9875
B028	B028-2	12/13/05	2	3	Area 1	MG/KG	2.275
B028	B028-5	12/13/05	5	6	Area 1	MG/KG	1.3375
B034	B034-2	12/14/05	2	3	Area 1	MG/KG	<1.25
B035	B035-2	12/14/05	2	3	Area 1	MG/KG	3.625
B036	B036-2	12/14/05	2	3	Area 1	MG/KG	3.425
B036	B036-5	12/14/05	5	6	Area 1	MG/KG	2.375
B036	B036-10	12/14/05	10	11	Area 1	MG/KG	4.95
B037	B037-2	12/19/05	2	3	Area 1	MG/KG	5.3375
B038	B038-2	12/19/05	2	3	Area 1	MG/KG	<1.25
B039	B039-2	12/16/05	2	3	Area 1	MG/KG	2.3125
B039	B039-5	12/16/05	5	6	Area 1	MG/KG	3.825
B040	B040-2	12/19/05	2	3	Area 1	MG/KG	4.1125
B041	B041-2	12/28/05	2	3	Area 3	MG/KG	<1.25
B042	B042-2	12/20/05	2	3	Area 3	MG/KG	<1.25
B042	B042-5	12/20/05	5	6	Area 3	MG/KG	4.2625
B043	B043-2	12/16/05	2	3	Area 1	MG/KG	4.175
B044	B044-2	12/16/05	2	3	Area 1	MG/KG	1.185
B045	B045-2	12/15/05	2	3	Area 1	MG/KG	<1.25
B046	B046-2	12/15/05	2	3	Area 1	MG/KG	4.5125
B047	B047-2	12/15/05	2	3	Area 1	MG/KG	4.2875
B048	B048-2	12/20/05	2	3	Area 1	MG/KG	6.3125
B048	B048-5	12/20/05	5	6	Area 1	MG/KG	5.6875
B049	B049-2	12/14/05	2	3	Area 1	MG/KG	<1.25

Table A2
Results of Arsenic Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Arsenic
B050	B050-2	12/13/05	2	3	Area 1	MG/KG	4.15
B055	B055-2	12/21/05	2	3	Area 1	MG/KG	1.7375
B056	B056-2	12/14/05	2	3	Area 1	MG/KG	3.1125
B057	B057-2	12/13/05	2	3	Area 1	MG/KG	3.5375
B058	B058-2	12/20/05	2	3	Area 1	MG/KG	<1.25
B059	B059-2	12/20/05	2	3	Area 1	MG/KG	<1.25
B060	B060-2	12/20/05	2	3	Area 1	MG/KG	<1.25
B061	B061-2	12/20/05	2	3	Area 1	MG/KG	<1.25
B062	B062-2	12/21/05	2	3	Area 1	MG/KG	0.45
B063	B063-2	1/9/06	2	3	Area 3	MG/KG	3.1875
B066	B066-2	1/12/06	2	3	Area 1	MG/KG	4.6625
B066	B066-5	1/12/06	5	6	Area 1	MG/KG	3.3625
B067	B067-2	12/21/05	2	3	Area 1	MG/KG	0.875
B067	B067-5	12/21/05	5	6	Area 1	MG/KG	4.0625
B070	B070-2	12/22/05	2	3	Area 1	MG/KG	3.675
B070	B070-5	12/22/05	5	6	Area 1	MG/KG	<1.25
B078	B078-2	12/23/05	2	3	Area 2	MG/KG	2.8875
B079	B079-2	12/23/05	2	3	Area 2	MG/KG	6.05
B080	B080-2	12/22/05	2	3	Area 1	MG/KG	7.6625
B081	B081-2	12/22/05	2	3	Area 1	MG/KG	<1.25
B084	B084-2	1/5/06	2	3	Area 2	MG/KG	<1.25
B085	B085-2	12/28/05	2	3	Area 2	MG/KG	5.9
B088	B088-2	1/18/06	2	3	Area 2	MG/KG	<1.87
B088	B088-5	1/18/06	5	6	Area 2	MG/KG	7.125
B089	B089-2	1/9/06	2	3	Area 2	MG/KG	5.8625
B090	B090-2	1/10/06	2	3	Area 2	MG/KG	<1.25
B090	B090-5	1/10/06	5	6	Area 2	MG/KG	<1.25
B092	B092-2	1/5/06	2	3	Area 2	MG/KG	<1.25
B093	B093-2	1/5/06	2	3	Area 2	MG/KG	<1.25
B099	B099-2	1/3/06	2	3	Area 2	MG/KG	1.5375
B099	B099-5	1/3/06	5	6	Area 2	MG/KG	3.875
B101	B101-2	1/10/06	2	3	Area 2	MG/KG	<1.25
B103	B103-2	1/6/06	2	3	Area 2	MG/KG	<1.25
B104	B104-2	2/3/06	2	3	Area 2	MG/KG	3.8625
B104	B104-5	2/3/06	5	6	Area 2	MG/KG	2.675
B105	B105-2	1/10/06	2	3	Area 2	MG/KG	<1.25
B105	B105-5	1/10/06	5	6	Area 2	MG/KG	<1.25
B108	B108-2	1/9/06	2	3	Area 2	MG/KG	6.4
B108	B108-5	1/9/06	5	6	Area 2	MG/KG	28.125
B108	B108-10	1/9/06	10	11	Area 2	MG/KG	5.575
B115	B115-2	1/3/06	2	3	Area 2	MG/KG	6.1125
B117	B117-2	1/6/06	2	3	Area 2	MG/KG	6.35
B117	B117-5	1/6/06	5	6	Area 2	MG/KG	4.5
B118	B118-2	1/6/06	2	3	Area 2	MG/KG	4.8875
B118	B118-5	1/6/06	5	6	Area 2	MG/KG	5.7375
B119	B119-2	1/27/06	2	3	Area 2	MG/KG	<2.5
B120	B120-2	1/30/06	2	3	Area 4	MG/KG	4.125
B120	B120-5	1/30/06	5	6	Area 4	MG/KG	4.5
B121	B121-2	2/1/06	2	3	Area 4	MG/KG	<2.86
B123	B123-2	1/20/06	2	3	Area 4	MG/KG	1.3375

Table A2
Results of Arsenic Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Arsenic
B123	B123-5	1/20/06	5	6	Area 4	MG/KG	2.8
B124	B124-2	1/16/06	2	3	Area 4	MG/KG	0.82375
B124	B124-5	1/16/06	5	6	Area 4	MG/KG	4.2375
B126	B126-2	1/20/06	2	3	Area 4	MG/KG	3.225
B126	B126-5	1/20/06	5	6	Area 4	MG/KG	4.2875
B127	B127-2	1/18/06	2	3	Area 4	MG/KG	<1.35
B127	B127-5	1/18/06	5	6	Area 4	MG/KG	<3.21
B128	B128-2	2/1/06	2	3	Area 4	MG/KG	<1.28
B128	B128-5	2/1/06	5	6	Area 4	MG/KG	7.6
B129	B129-2	1/18/06	2	3	Area 4	MG/KG	<2.51
B129	B129-5	1/18/06	5	6	Area 4	MG/KG	<1.72
B132	B132-2	1/19/06	2	3	Area 4	MG/KG	<2.89
B132	B132-5	1/19/06	5	6	Area 4	MG/KG	6.0125
B134	B134-2	1/23/06	2	3	Area 4	MG/KG	<3.11
B134	B134-5	1/23/06	5	6	Area 4	MG/KG	<1.25
B139	B139-2	1/13/06	2	3	Area 4	MG/KG	1.35
B140	B140-2	1/31/06	2	3	Area 4	MG/KG	<3.81
B142	B142-2	1/31/06	2	3	Area 3	MG/KG	<1.6
B142	B142-5	1/31/06	5	6	Area 3	MG/KG	<2.92
B142	B142-10	1/31/06	10	11	Area 3	MG/KG	<2.36
B144	B144-2	1/13/06	2	3	Area 3	MG/KG	1.725
B144	B144-5	1/13/06	5	6	Area 3	MG/KG	0.76625
B145	B145-2	1/19/06	2	3	Area 3	MG/KG	<2.21
B145	B145-5	1/19/06	5	6	Area 3	MG/KG	<1.14875
B146	B146-2	1/27/06	2	3	Area 3	MG/KG	<0.58125
B146	B146-5	1/27/06	5	6	Area 3	MG/KG	<1.45
B147	B147-2	2/1/06	2	3	Area 3	MG/KG	<1.25
B148	B148-2	1/23/06	2	3	Area 3	MG/KG	<1.08625
B148	B148-5	1/23/06	5	6	Area 3	MG/KG	<2.53
B149	B149-2	1/23/06	2	3	Area 3	MG/KG	<1.25
B149	B149-5	1/23/06	5	6	Area 3	MG/KG	<2.97
B149	B149-10	1/23/06	10	11	Area 3	MG/KG	<3.7
B150	B150-2	1/20/06	2	3	Area 3	MG/KG	1.9
B150	B150-5	1/20/06	5	6	Area 3	MG/KG	2.825
B151	B151-2	1/19/06	2	3	Area 4	MG/KG	<1.45
B151	B151-5	1/19/06	5	6	Area 4	MG/KG	<1.6
B151	B151-10	1/19/06	10	11	Area 4	MG/KG	8.825
B153	B153-2	1/20/06	2	3	Area 3	MG/KG	2.625
B153	B153-5	1/20/06	5	6	Area 3	MG/KG	3.0625
B156	B156-2	1/13/06	2	3	Area 3	MG/KG	3.8625
B158	B158-2	1/30/06	2	3	Area 3	MG/KG	5.125
B159	B159-2	1/31/06	2	3	Area 3	MG/KG	<2.7
B159	B159-5	1/31/06	5	6	Area 3	MG/KG	<4.97
B160	B160-2	1/31/06	2	3	Area 3	MG/KG	<3.31
B162	B162-2	1/16/06	2	3	Area 3	MG/KG	1.185
B163	B163-2	1/16/06	2	3	Area 3	MG/KG	1.9
B163	B163-5	1/16/06	5	6	Area 3	MG/KG	3.25
B164	B164-2	1/16/06	2	3	Area 3	MG/KG	3.9125
B165	B165-2	1/23/06	2	3	Area 3	MG/KG	<2.69
B166	B166-2	1/24/06	2	3	Area 3	MG/KG	<1.85

Table A2
Results of Arsenic Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Arsenic
B166	B166-5	1/24/06	5	6	Area 3	MG/KG	6.975
B167	B167-2	1/17/06	2	3	Area 3	MG/KG	0.715
B167	B167-5	1/17/06	5	6	Area 3	MG/KG	2.475
B168	B168-2	1/17/06	2	3	Area 3	MG/KG	2.225
B169	B169-2	1/17/06	2	3	Area 3	MG/KG	0.495
B170	B170-2	1/18/06	2	3	Area 3	MG/KG	<4.59
B170	B170-5	1/18/06	5	6	Area 3	MG/KG	<2.88
B172	B172-2	1/12/06	2	3	Area 3	MG/KG	<1.25
B173	B173-2	1/12/06	2	3	Area 3	MG/KG	<1.25
B173	B173-5	1/12/06	5	6	Area 3	MG/KG	3.2875
B174	B174-2	1/12/06	2	3	Area 3	MG/KG	2.9
B174	B174-5	1/12/06	5	6	Area 3	MG/KG	4
B174	B174-10	1/12/06	10	11	Area 3	MG/KG	4.1625
B175	B175-2	2/7/06	2	3	Area 3	MG/KG	<2.99
B177	B177-2	2/2/06	2	3	Area 3	MG/KG	<2.09
B178	B178-2	2/2/06	2	3	Area 3	MG/KG	<4.01
B178	B178-5	2/2/06	5	6	Area 3	MG/KG	<2.25
B179	B179-2	1/26/06	2	3	Area 3	MG/KG	3.825
B180	B180-2	1/26/06	2	3	Area 3	MG/KG	1.125
B180	B180-5	1/26/06	5	6	Area 3	MG/KG	2.4375
B181	B181-2	2/6/06	2	3	Area 3	MG/KG	1.75
B182	B182-2	1/24/06	2	3	Area 3	MG/KG	<1.7
B182	B182-5	1/25/06	5	6	Area 3	MG/KG	3.5
B183	B183-2	1/25/06	2	3	Area 3	MG/KG	3
B184	B184-2	1/25/06	2	3	Area 3	MG/KG	0.45125
B185	B185-2	1/26/06	2	3	Area 3	MG/KG	1.2325
B186	B186-2	1/27/06	2	3	Area 3	MG/KG	<1.98
B187	B187-2	1/27/06	2	3	Area 3	MG/KG	5.05
B189	B189-2	2/7/06	2	3	Area 2	MG/KG	<6.07
B191	B191-2	2/1/06	2	3	Area 2	MG/KG	<3.07
B191	B191-5	2/1/06	5	6	Area 2	MG/KG	<4.87
B195	B195-2	2/3/06	2	3	Area 3	MG/KG	2.5
B196	B196-2	1/25/06	2	3	Area 3	MG/KG	0.9375
B197	B197-2	2/1/06	2	3	Area 3	MG/KG	<1.97
B198	B198-2	1/26/06	2	3	Area 3	MG/KG	2.275
B198	B198-5	1/26/06	5	6	Area 3	MG/KG	4.7
B199	B199-2	1/23/06	2	3	Area 3	MG/KG	3.375
B200	B200-2	1/24/06	2	3	Area 3	MG/KG	<2.37
B201	B201-2	1/25/06	2	3	Area 3	MG/KG	2.15
B201	B201-5	1/25/06	5	6	Area 3	MG/KG	3.75
B202	B202-2	1/25/06	2	3	Area 3	MG/KG	0.79
B203	B203-2	2/7/06	2	3	Area 3	MG/KG	6.8
B204	B204-2	2/6/06	2	3	Area 3	MG/KG	3.95
B205	B205-2	2/7/06	2	3	Area 3	MG/KG	4.55
B205	B205-5	2/7/06	5	6	Area 3	MG/KG	3.825
B206	B206-2	2/8/06	2	3	Area 2	MG/KG	3.6625
B206	B206-5	2/8/06	5	6	Area 2	MG/KG	4.0875
B209	B209-2	1/31/06	2	3	Area 2	MG/KG	<2.25
B210	B210-2	1/31/06	2	3	Area 3	MG/KG	<3.16
B211	B211-2	2/6/06	2	3	Area 3	MG/KG	3.0625

Table A2
Results of Arsenic Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Arsenic
B212	B212-2	1/24/06	2	3	Area 3	MG/KG	<1.14
B213	B213-2	2/6/06	2	3	Area 3	MG/KG	1.9
B214	B214-2	1/23/06	2	3	Area 3	MG/KG	<1.25
B215	B215-2	2/3/06	2	3	Area 3	MG/KG	1.2025
B215	B215-5	2/3/06	5	6	Area 3	MG/KG	3.2625
B216	B216-2	2/2/06	2	3	Area 3	MG/KG	<1.26
B217	B217-2	1/24/06	2	3	Area 3	MG/KG	<2.08
B218	B218-2	2/8/06	2	3	Area 3	MG/KG	<4.45
B219	B219-2	1/26/06	2	3	Area 3	MG/KG	0.745
B219	B219-5	1/26/06	5	6	Area 3	MG/KG	0.90625
B223	B223-2	2/3/06	2	3	Area 2	MG/KG	3.725
B223	B223-5	2/3/06	5	6	Area 2	MG/KG	7.2125
B228	B228-05	1/18/08	5	6	Area 1	MG/KG	10
B229	B229-05	1/18/08	5	6	Area 1	MG/KG	11.1
B235	B235-5	1/25/08	5	6	Area 4	MG/KG	8.71
B247	B247-05	1/17/08	5	6	Area 1	MG/KG	11.8
B248	B248-05	1/15/08	5	6	Area 1	MG/KG	9.2
B251	B251-05	1/16/08	5	6	Area 1	MG/KG	6.47
B262	B262-05	1/29/08	5	6	Area 3	MG/KG	5.92
B270	B270-5	1/20/09	4.5	5.5	Area 3	MG/KG	10.8
B278	B278-5	1/16/08	5	6	Area 1	MG/KG	10.3
B279	B279-5	1/16/08	5	6	Area 1	MG/KG	4.66
B294	B294-05	1/31/08	4.5	5	Area 2	MG/KG	9.55
B302	B302-05	2/5/08	5	6	Area 4	MG/KG	10.7
B303	B303-05	1/28/08	5	6	Area 4	MG/KG	5.95
B306	B306-05	1/31/08	5	6	Area 3	MG/KG	5.77
B322	B322-05	2/1/08	5	6	Area 3	MG/KG	4.47
B324	B324-00	4/8/08	0	0.5	Area 4	MG/KG	7.13
B324	B324-02	4/8/08	1.5	2	Area 4	MG/KG	7.38
B325	B325-00	4/8/08	0	0.5	Area 4	MG/KG	6.01
B325	B325-02	4/8/08	1.5	2	Area 4	MG/KG	5.23
B326	B326-00	4/8/08	0	0.5	Area 4	MG/KG	7.14
B326	B326-02	4/8/08	1.5	2	Area 4	MG/KG	8.37
B-401	LL_B-401-1_100611	10/6/11	0.5	1	Area 2	MG/KG	<5.0
B-403	LL_B-403-1_100711	10/7/11	0.5	1	Area 2	MG/KG	<5.0
B-404	LL_B-404-3_100711	10/7/11	2.5	3	Area 2	MG/KG	<5.0
B-405	LL_B-405-1_100711	10/7/11	0.5	1	Area 2	MG/KG	<5.0
B-406	LL_B-406-6_100711	10/7/11	5.5	6	Area 2	MG/KG	<5.0
B-407	LL_B-407-9_100711	10/7/11	8.5	9	Area 2	MG/KG	<5.0
B-408	LL_B-408-1_100711	10/7/11	0.5	1	Area 2	MG/KG	<5.0
B-410	LL_B-410-3_100711	10/7/11	2.5	3	Area 2	MG/KG	<5.0
B-412	LL_B-412-1_100611	10/6/11	0.5	1	Area 1	MG/KG	<5.0
B-413	LL_B-413-3_100611	10/6/11	2.5	3	Area 1	MG/KG	<5.0
B-414	LL_B-414-1_100611	10/6/11	0.5	1	Area 1	MG/KG	<5.0
B-415	LL_B-415-6_100611	10/6/11	5.5	6	Area 1	MG/KG	<5.0
B-416	LL_B-416-9_100611	10/6/11	8.5	9	Area 1	MG/KG	<5.0
B-418	LL_B-418-6_100611	10/6/11	5.5	6	Area 1	MG/KG	<5.0
B-420	LL_B-420-9_100611	10/6/11	8.5	9	Area 1	MG/KG	5.2
B-422	LL_B-422-1_100511	10/5/11	0.5	1	Area 3	MG/KG	<5.0
B-422	LL_B-422-9_100611	10/6/11	8.5	9	Area 3	MG/KG	<5.0

Table A2
Results of Arsenic Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Arsenic
B-424	LL_B-424-3_100511	10/5/11	2.5	3	Area 3	MG/KG	<5.0
B-426	LL_B-426-1_100511	10/5/11	0.5	1	Area 3	MG/KG	<5.0
B-427	LL_B-427-6_100511	10/5/11	5.5	6	Area 3	MG/KG	<5.0
B-429	LL_B-429-9_100511	10/5/11	8.5	9	Area 3	MG/KG	<5.0
B-430	LL_B-430-3_100511	10/5/11	2.5	3	Area 3	MG/KG	<5.0
S001	S001-0"	12/4/07	0	0.5	Area 4	MG/KG	6.3
S002	S002-0"	12/4/07	0	0.5	Area 4	MG/KG	8.56
S003ALT	S003ALT-0"	12/20/07	0	0.5	Area 4	MG/KG	7.3
S004	S004-0"	1/4/08	0	0.5	Area 4	MG/KG	3.14
S004	S004-12"	1/4/08	1	1.5	Area 4	MG/KG	3.87
S005	S005-0"	12/18/07	0	0.5	Area 4	MG/KG	6.41
S006	S006-0"	12/17/07	0	0.5	Area 4	MG/KG	4.72
S006	S006-12"	12/17/07	1	1.5	Area 4	MG/KG	3.15
S007	S007-0"	12/17/07	0	0.5	Area 4	MG/KG	11.6
S008	S008-0"	12/17/07	0	0.5	Area 4	MG/KG	6.03
S009	S009-0"	12/17/07	0	0.5	Area 4	MG/KG	5.07
S009	S009-12"	12/17/07	1	1.5	Area 4	MG/KG	6.92
S010	S010-6''	1/19/09	0.5	1	Area 4	MG/KG	11.9
S011	S011-0"	12/17/07	0	0.5	Area 4	MG/KG	6.05
S011	S011-12"	12/17/07	1	1.5	Area 4	MG/KG	4.46
S012	S012B-0"	12/18/07	0	0.5	Area 4	MG/KG	5.21
S013	S013-0"	1/4/08	0	0.5	Area 4	MG/KG	5.1
S014	S014-0"	12/4/07	0	0.5	Area 4	MG/KG	7.38
S015	S015-0"	12/4/07	0	0.5	Area 4	MG/KG	5.84
S016	S016B-0"	1/2/08	0	0.5	Area 4	MG/KG	3.3
S016	S016B-12"	1/2/08	1	1.5	Area 4	MG/KG	3.47
S017	S017-0"	12/4/07	0	0.5	Area 4	MG/KG	8
S018	S018-0"	12/20/07	0	0.5	Area 4	MG/KG	4.25
S019	S019-0"	12/18/07	0	0.5	Area 4	MG/KG	9.11
S020	S020-0"	12/18/07	0	0.5	Area 4	MG/KG	6.6
S020	S020-12"	12/18/07	1	1.5	Area 4	MG/KG	6
S021	S021-6''	1/19/09	0.5	1	Area 4	MG/KG	8.39
S022	S022-0"	12/17/07	0	0.5	Area 4	MG/KG	5.75
S023	S023-0"	12/17/07	0	0.5	Area 3	MG/KG	5.82
S024	S024-0"	12/17/07	0	0.5	Area 3	MG/KG	6.82
S025	S025-0"	12/18/07	0	0.5	Area 3	MG/KG	19.1
S025	S025-12"	12/18/07	1	1.5	Area 3	MG/KG	6.46
S026	S026-0"	12/18/07	0	0.5	Area 3	MG/KG	9.83
S026	S026-12"	12/18/07	1	1.5	Area 3	MG/KG	19.6
S027	S027-0"	12/20/07	0	0.5	Area 3	MG/KG	10.8
S028	S028-0"	12/4/07	0	0.5	Area 3	MG/KG	1.33
S029	S029-0"	12/4/07	0	0.5	Area 3	MG/KG	3.46
S029	S029-18"	12/4/07	1.5	2	Area 3	MG/KG	3.63
S030	S030-12"	12/4/07	1	1.5	Area 3	MG/KG	5.43
S031	S031-0"	12/4/07	0	0.5	Area 3	MG/KG	4.65
S032	S032-0"	12/4/07	0	0.5	Area 3	MG/KG	7.72
S033	S033-0"	12/4/07	0	0.5	Area 3	MG/KG	5.63
S034	S034-0"	12/4/07	0	0.5	Area 3	MG/KG	9.67
S035	S035-0"	12/4/07	0	0.5	Area 3	MG/KG	5.54
S036	S036-0"	12/4/07	0	0.5	Area 3	MG/KG	10.4

Table A2
Results of Arsenic Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Arsenic
S037	S037-0"	12/4/07	0	0.5	Area 3	MG/KG	18.8
S037	S037-20"	12/4/07	1.67	2.167	Area 3	MG/KG	9.72
S038	S038-0"	12/20/07	0	0.5	Area 3	MG/KG	5.76
S039	S039-0"	1/2/08	0	0.5	Area 3	MG/KG	10.9
S039	S039-12"	1/2/08	1	1.5	Area 3	MG/KG	4.39
S040	S040-0"	12/20/07	0	0.5	Area 3	MG/KG	40.9
S040	S040-12"	12/20/07	1	1.5	Area 3	MG/KG	6.6
S041	S041-0"	1/30/08	0	0.5	Area 3	MG/KG	7.08
S042	S042-0"	1/30/08	0	0.5	Area 3	MG/KG	8.52
S042	S042-12"	1/30/08	1	1.5	Area 3	MG/KG	6.2
S043	S043-0"	1/30/08	0	0.5	Area 3	MG/KG	8.92
S044	S044-0"	12/20/07	0	0.5	Area 3	MG/KG	7.11
S045	S045-0"	12/20/07	0	0.5	Area 3	MG/KG	8.96
S046	S046-0"	12/20/07	0	0.5	Area 3	MG/KG	4.83
S047	S047-6"	1/20/09	0.5	1	Area 3	MG/KG	5.26
S048	S048-0"	1/7/08	0	0.5	Area 3	MG/KG	7.2
S049	S049-6"	1/20/09	0.5	1	Area 3	MG/KG	6.21
S050	S050-0"	12/4/07	0	0.5	Area 3	MG/KG	5.45
S051	S051-0"	12/20/07	0	0.5	Area 3	MG/KG	3.55
S052	S052-0"	12/20/07	0	0.5	Area 3	MG/KG	5.62
S052	S052-12"	12/20/07	1	1.5	Area 3	MG/KG	3.18
S053	S053-0"	12/20/07	0	0.5	Area 3	MG/KG	6.23
S053	S053-12"	12/20/07	1	1.5	Area 3	MG/KG	5.2
S054	S054-0"	1/30/08	0	0.5	Area 3	MG/KG	13.4
S055	S055-0"	1/30/08	0	0.5	Area 3	MG/KG	7.19
S055	S055-12"	1/30/08	1	1.5	Area 3	MG/KG	7.85
S056	S056-0"	1/30/08	0	0.5	Area 3	MG/KG	7.53
S056	S056-12"	1/30/08	1	1.5	Area 3	MG/KG	6.76
S057	S057-0"	1/30/08	0	0.5	Area 3	MG/KG	7.09
S058	S058-0"	2/1/08	0	0.5	Area 3	MG/KG	6.51
S059	S059-0"	2/1/08	0	0.5	Area 3	MG/KG	3.91
S059	S059-12"	2/1/08	1	1.5	Area 3	MG/KG	5.96
S060	S060-0"	12/13/07	0	0.5	Area 3	MG/KG	7.89
S060	S060-18"	12/13/07	1.5	2	Area 3	MG/KG	3.28
S061	S061-0"	12/13/07	0	0.5	Area 3	MG/KG	5.31
S063	S063-0"	12/14/07	0	0.5	Area 3	MG/KG	5.08
S064	S064-0"	12/14/07	0	0.5	Area 3	MG/KG	6.78
S064	S064-18"	12/14/07	1.5	2	Area 3	MG/KG	7.45
S065	S065-0"	2/1/08	0	0.5	Area 3	MG/KG	6.73
S065	S065-12"	2/1/08	1	1.5	Area 3	MG/KG	5.63
S066	S066-0"	12/14/07	0	0.5	Area 3	MG/KG	5.95
S067	S067-0"	12/14/07	0	0.5	Area 3	MG/KG	8
S068	S068-0"	12/13/07	0	0.5	Area 3	MG/KG	6.33
S069	S069-0"	12/13/07	0	0.5	Area 3	MG/KG	2.22
S070	S070-0"	12/13/07	0	0.5	Area 3	MG/KG	3.72
S071B	S071B-12"	12/21/07	1	1.5	Area 3	MG/KG	0.874
S072	S072-0"	12/4/07	0	0.5	Area 3	MG/KG	9.42
S073	S073-0"	12/4/07	0	0.5	Area 3	MG/KG	8.97
S074	S074-0"	12/4/07	0	0.5	Area 3	MG/KG	7.75
S075	S075-0"	12/4/07	0	0.5	Area 3	MG/KG	7.06

Table A2
Results of Arsenic Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Arsenic
S076	S076-6''	1/22/09	0.5	1	Area 3	MG/KG	4.45
S078	S078-0"	2/1/08	0	0.5	Area 3	MG/KG	5.3
S078	S078-12"	2/1/08	1	1.5	Area 3	MG/KG	4.49
S079	S079-0"	2/1/08	0	0.5	Area 3	MG/KG	1.84
S080	S080-0"	2/1/08	0	0.5	Area 3	MG/KG	3.86
S081	S081-0"	2/1/08	0	0.5	Area 3	MG/KG	8.49
S082	S082-0"	12/13/07	0	0.5	Area 3	MG/KG	7.61
S083	S083-0"	12/13/07	0	0.5	Area 3	MG/KG	5.83
S083	S083-15"	12/13/07	1.25	1.75	Area 3	MG/KG	4.6
S084	S084-0"	12/4/07	0	0.5	Area 3	MG/KG	7.48
S085	S085-0"	12/4/07	0	0.5	Area 3	MG/KG	4.52
S086	S086-6"	1/20/09	0.5	1	Area 3	MG/KG	8.67
S087	S087-0"	12/13/07	0	0.5	Area 3	MG/KG	5.02
S088	S088-0"	1/2/08	0	0.5	Area 3	MG/KG	5.63
S089	S089-0"	1/2/08	0	0.5	Area 3	MG/KG	2.33
S090	S090-0"	12/13/07	0	0.5	Area 3	MG/KG	5.01
S090	S090-18"	12/13/07	1.5	2	Area 3	MG/KG	<0.819
S091	S091-0"	2/1/08	0	0.5	Area 3	MG/KG	7.04
S092	S092-0"	12/13/07	0	0.5	Area 3	MG/KG	6.38
S093	S093-0"	12/4/07	0	0.5	Area 3	MG/KG	5.43
S094	S094-0"	12/4/07	0	0.5	Area 3	MG/KG	3.96
S095	S095-0"	12/4/07	0	0.5	Area 3	MG/KG	8.54
S096	S096-0"	12/4/07	0	0.5	Area 3	MG/KG	8.44
S097	S097-6"	1/20/09	0.5	1	Area 3	MG/KG	5.66
S098	S098-0"	12/4/07	0	0.5	Area 3	MG/KG	5.22
S099	S099-0"	12/13/07	0	0.5	Area 3	MG/KG	2.62
S100	S100-0"	12/13/07	0	0.5	Area 3	MG/KG	8.22
S101	S101-0"	12/13/07	0	0.5	Area 3	MG/KG	7.88
S102	S102-0"	12/13/07	0	0.5	Area 3	MG/KG	7.49
S102	S102-15"	12/13/07	1.25	1.75	Area 3	MG/KG	7.88
S103	S103-0"	1/3/08	0	0.5	Area 2	MG/KG	5.78
S103	S103-12"	1/3/08	1	1.5	Area 2	MG/KG	5.9
S104	S104-0"	1/29/08	0	0.5	Area 2	MG/KG	8.05
S105	S105-0"	1/31/08	0	0.5	Area 2	MG/KG	9.79
S106	S106-6''	1/22/09	0.5	1	Area 2	MG/KG	7.77
S106	S106-12''	1/22/09	1	1.5	Area 2	MG/KG	10.1
S107	S107-0"	12/20/07	0	0.5	Area 2	MG/KG	3.26
S108	S108-0"	12/20/07	0	0.5	Area 2	MG/KG	8.71
S109	S109-0"	1/31/08	0	0.5	Area 2	MG/KG	13.2
S109	S109-12"	1/31/08	1	1.5	Area 2	MG/KG	8.25
S110	S110-6''	1/22/09	0.5	1	Area 2	MG/KG	18.6
S111	S111-0"	12/21/07	0	0.5	Area 2	MG/KG	4.95
S111	S111-12"	12/21/07	1	1.5	Area 2	MG/KG	2.29
S112	S112-6''	1/22/09	0.5	1	Area 2	MG/KG	7.56
S113	S113-0"	1/31/08	0	0.5	Area 2	MG/KG	6.5
S113	S113-12"	1/31/08	1	1.5	Area 2	MG/KG	7.73
S114	S114-0"	1/29/08	0	0.5	Area 2	MG/KG	9.35
S115	S115-0"	1/29/08	0	0.5	Area 2	MG/KG	7.56
S116	S116-0"	1/29/08	0	0.5	Area 2	MG/KG	6.14
S117	S117-0"	1/31/08	0	0.5	Area 2	MG/KG	5.86

Table A2
Results of Arsenic Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Arsenic
S117	S117-12"	2/1/08	1	1.5	Area 2	MG/KG	5.88
S118	S118-6''	1/22/09	0.5	1	Area 2	MG/KG	10.9
S119	S119-0"	1/4/08	0	0.5	Area 2	MG/KG	5.68
S119	S119-12"	1/4/08	1	1.5	Area 2	MG/KG	6.96
S120	S120-0"	1/4/08	0	0.5	Area 2	MG/KG	13.8
S121	S121-0"	1/4/08	0	0.5	Area 2	MG/KG	9.15
S121	S121-12"	1/4/08	1	1.5	Area 2	MG/KG	6.67
S122	S122-0"	1/29/08	0	0.5	Area 1	MG/KG	4.85
S123	S123-0"	11/29/07	0	0.5	Area 1	MG/KG	7.6
S124	S124-0"	11/29/07	0	0.5	Area 1	MG/KG	7.24
S125	S125-0"	1/29/08	0	0.5	Area 1	MG/KG	13.4
S126	S126-0"	1/7/08	0	0.5	Area 1	MG/KG	3.57
S126	S126-12"	1/7/08	1	1.5	Area 1	MG/KG	4.45
S127	S127-0"	2/1/08	0	0.5	Area 3	MG/KG	4.54
S130	S130-0"	1/7/08	0	0.5	Area 3	MG/KG	6.16
S130	S130-12"	1/7/08	1	1.5	Area 3	MG/KG	4.05
S131	S131-0"	1/7/08	0	0.5	Area 1	MG/KG	2.34
S132	S132-0"	1/3/08	0	0.5	Area 1	MG/KG	8.85
S133	S133B-0"	11/29/07	0	0.5	Area 1	MG/KG	5.22
S133	S133B-12"	11/29/07	1	1.5	Area 1	MG/KG	6.27
S134	S134-0"	1/7/08	0	0.5	Area 1	MG/KG	4.05
S135	S135-6''	1/19/09	0.5	1	Area 1	MG/KG	3.37
S136	S136-0"	11/29/07	0	0.5	Area 1	MG/KG	5.58
S136	S136-24"	11/29/07	2	2.5	Area 1	MG/KG	7.83
S137	S137-0"	11/29/07	0	0.5	Area 1	MG/KG	5.78
S138	S138-0"	11/29/07	0	0.5	Area 1	MG/KG	4.6
S138	S138-18"	11/29/07	1.5	2	Area 1	MG/KG	5.78
S139	S139-12"	11/29/07	1	1.5	Area 1	MG/KG	8.35
S139	S139-24"	11/29/07	2	2.5	Area 1	MG/KG	7.48
S140	S140-12"	11/29/07	1	1.5	Area 1	MG/KG	3.73
S141	S141-0"	1/7/08	0	0.5	Area 3	MG/KG	9.85
S141	S141-12"	1/7/08	1	1.5	Area 3	MG/KG	3.34
S142	S142-0"	1/7/08	0	0.5	Area 3	MG/KG	5.98
S143	S143-0"	1/7/08	0	0.5	Area 3	MG/KG	5.62
S144B	S144B-0"	1/31/08	0	0.5	Area 3	MG/KG	5.9
S144B	S144B-12"	1/31/08	1	1.5	Area 3	MG/KG	8.7
S145	S145-0"	1/7/08	0	0.5	Area 3	MG/KG	4.13
S145	S145-12"	1/7/08	1	1.5	Area 3	MG/KG	6.62
S146	S146-0"	11/29/07	0	0.5	Area 1	MG/KG	5.36
S147	S147-12"	11/29/07	1	1.5	Area 1	MG/KG	5.92
S148	S148-0"	11/29/07	0	0.5	Area 1	MG/KG	9.99
S149	S149-12"	11/29/07	1	1.5	Area 1	MG/KG	7.89
S150	S150-12"	11/29/07	1	1.5	Area 1	MG/KG	8.41
S151	S151-12"	11/29/07	1	1.5	Area 1	MG/KG	7.91
S152	S152-0"	11/29/07	0	0.5	Area 1	MG/KG	5.42
S153	S153-0"	11/29/07	0	0.5	Area 1	MG/KG	9.65
S154	S154-0"	11/29/07	0	0.5	Area 1	MG/KG	5.11
S155	S155B-0"	11/29/07	0	0.5	Area 1	MG/KG	11.7
S156	S156-0"	1/7/08	0	0.5	Area 3	MG/KG	4.09
S157	S157-0"	1/2/08	0	0.5	Area 3	MG/KG	5.44

Table A2
Results of Arsenic Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Arsenic
S158	S158-0"	12/17/07	0	0.5	Area 3	MG/KG	6.4
S158	S158-12"	12/17/07	1	1.5	Area 3	MG/KG	5.31
S159	S159-0"	12/17/07	0	0.5	Area 3	MG/KG	6.33
S160	S160-0"	1/7/08	0	0.5	Area 3	MG/KG	5.29
S161	S161B-0"	11/29/07	0	0.5	Area 1	MG/KG	4.63
S162	S162-12"	11/29/07	1	1.5	Area 1	MG/KG	5.43
S162	S162-24"	11/29/07	2	2.5	Area 1	MG/KG	4
S163	S163-0"	11/29/07	0	0.5	Area 1	MG/KG	5.07
S164	S164-0"	11/29/07	0	0.5	Area 1	MG/KG	5.69
S165	S165-0"	11/29/07	0	0.5	Area 1	MG/KG	13.5
S166	S166-0"	11/29/07	0	0.5	Area 1	MG/KG	9.6
S167	S167-0"	11/29/07	0	0.5	Area 1	MG/KG	7.37
S168	S168-0"	11/29/07	0	0.5	Area 1	MG/KG	6.83
S169	S169-0"	11/29/07	0	0.5	Area 1	MG/KG	9.52
S170	S170-0"	1/7/08	0	0.5	Area 3	MG/KG	4.59
S171	S171-0"	12/17/07	0	0.5	Area 3	MG/KG	5.04
S171	S171-12"	12/17/07	1	1.5	Area 3	MG/KG	4.25
S172	S172-0"	12/17/07	0	0.5	Area 3	MG/KG	3.47
S173	S173-0"	12/17/07	0	0.5	Area 3	MG/KG	3.14
S174	S174-0"	12/14/07	0	0.5	Area 3	MG/KG	5.64
S175	S175-0"	1/7/08	0	0.5	Area 3	MG/KG	4.66
S175	S175-0"	1/31/08	0	0.5	Area 3	MG/KG	5.53
S176	S176-0"	11/28/07	0	0.5	Area 1	MG/KG	5.13
S177	S177-0"	11/28/07	0	0.5	Area 1	MG/KG	1.89
S178	S178-0"	11/28/07	0	0.5	Area 1	MG/KG	3.79
S179	S179-0"	11/28/07	0	0.5	Area 1	MG/KG	3.01
S180	S180-0"	11/28/07	0	0.5	Area 1	MG/KG	1.07
S181	S181-0"	1/31/08	0	0.5	Area 3	MG/KG	8.03
S182	S182-0"	12/14/07	0	0.5	Area 3	MG/KG	8.95
S183	S183-0"	12/17/07	0	0.5	Area 3	MG/KG	6.79
S184	S184-0"	12/14/07	0	0.5	Area 3	MG/KG	5.94
S185	S185-6''	1/19/09	0.5	1	Area 3	MG/KG	5.42
S186	S186-0"	1/31/08	0	0.5	Area 3	MG/KG	6.68
S187	S187-0"	1/4/08	0	0.5	Area 1	MG/KG	4.64
S188	S188-0"	11/26/07	0	0.5	Area 1	MG/KG	3.08
S189	S189-0"	11/26/07	0	0.5	Area 1	MG/KG	2.13
S190	S190-0"	11/26/07	0	0.5	Area 1	MG/KG	11.2
S191	S191-0"	11/26/07	0	0.5	Area 1	MG/KG	12.6
S192	S192-0"	11/26/07	0	0.5	Area 1	MG/KG	3.85
S193	S193-0"	11/26/07	0	0.5	Area 1	MG/KG	2.86
S194	S194-0"	11/26/07	0	0.5	Area 1	MG/KG	7.68
S195	S195-0"	11/26/07	0	0.5	Area 1	MG/KG	8.28
S196	S196-0"	11/26/07	0	0.5	Area 1	MG/KG	6.28
S196	S196-18"	11/26/07	1.5	2	Area 1	MG/KG	7.24
S197	S197-0"	11/26/07	0	0.5	Area 1	MG/KG	5.85
S198	S198-0"	11/26/07	0	0.5	Area 1	MG/KG	4.39
S199	S199-12"	11/26/07	1	1.5	Area 1	MG/KG	6.98
S199	S199-24"	11/26/07	2	2.5	Area 1	MG/KG	7.89
S200	S200-0"	11/26/07	0	0.5	Area 1	MG/KG	3.64
S201	S201-0"	11/26/07	0	0.5	Area 1	MG/KG	4.45

Table A2
Results of Arsenic Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Arsenic
S201	S201-18"	11/26/07	1.5	2	Area 1	MG/KG	3.48
S202	S202-0"	11/28/07	0	0.5	Area 1	MG/KG	1.41
S203	S203-0"	11/28/07	0	0.5	Area 1	MG/KG	3.39
S204	S204-0"	11/28/07	0	0.5	Area 1	MG/KG	3.23
S205	S205-0"	11/28/07	0	0.5	Area 1	MG/KG	2.26
S206	S206-0"	11/28/07	0	0.5	Area 1	MG/KG	4.01
S207	S207-0"	11/28/07	0	0.5	Area 1	MG/KG	3.61
S208	S208-0"	11/26/07	0	0.5	Area 1	MG/KG	6.12
S209	S209-0"	11/26/07	0	0.5	Area 1	MG/KG	5.7
S210	S210-0"	11/26/07	0	0.5	Area 1	MG/KG	4.96
S211	S211-0"	11/26/07	0	0.5	Area 1	MG/KG	3.93
S212	S212-0"	11/26/07	0	0.5	Area 1	MG/KG	3.06
S213	S213-0"	11/28/07	0	0.5	Area 1	MG/KG	<0.862
S214	S214-0"	11/28/07	0	0.5	Area 1	MG/KG	2.01
S215	S215-0"	11/28/07	0	0.5	Area 1	MG/KG	<0.79
S216	S216-0"	11/28/07	0	0.5	Area 1	MG/KG	<0.805
S217	S217-0"	11/28/07	0	0.5	Area 1	MG/KG	4.12
S218	S218-0"	11/28/07	0	0.5	Area 1	MG/KG	<0.762
S219	S219-0"	11/28/07	0	0.5	Area 1	MG/KG	3.31
S220	S220-0"	11/28/07	0	0.5	Area 1	MG/KG	3.43
S221	S221-0"	11/28/07	0	0.5	Area 1	MG/KG	<0.812
S222	S222-0"	11/28/07	0	0.5	Area 1	MG/KG	<0.794
S223	S223-0"	11/28/07	0	0.5	Area 1	MG/KG	2.76
S224	S224-0"	11/28/07	0	0.5	Area 1	MG/KG	1.29
S225	S225-0"	11/28/07	0	0.5	Area 1	MG/KG	2.59
S226	S226-0"	11/28/07	0	0.5	Area 1	MG/KG	1.65
S227	S227-0"	11/29/07	0	0.5	Area 1	MG/KG	11
S228	S228-0"	11/28/07	0	0.5	Area 1	MG/KG	3
S229	S229-0"	11/28/07	0	0.5	Area 1	MG/KG	2.06
S230	S230-0"	11/28/07	0	0.5	Area 1	MG/KG	<0.798
S230	S230-12"	11/28/07	1	1.5	Area 1	MG/KG	<0.8
S231	S231-0"	11/28/07	0	0.5	Area 1	MG/KG	2.86
S232	S232-0"	11/28/07	0	0.5	Area 1	MG/KG	3.85
S233	S233-0"	11/28/07	0	0.5	Area 1	MG/KG	2.02
S234	S234-0"	11/28/07	0	0.5	Area 1	MG/KG	1.15
S235	S235-0"	11/28/07	0	0.5	Area 1	MG/KG	2.03
S236	S236-0"	11/28/07	0	0.5	Area 1	MG/KG	2.07
S237	S237-0"	11/29/07	0	0.5	Area 1	MG/KG	8.37
S238	S238-0"	1/28/08	0	0.5	Area 2	MG/KG	8.76
S239	S239-0"	1/28/08	0	0.5	Area 2	MG/KG	10.7
S239	S239-12"	1/30/08	1	1.5	Area 2	MG/KG	10.6
S240	S240-6"	1/20/09	0.5	1	Area 2	MG/KG	6.72
S241	S241-6"	1/20/09	0.5	1	Area 2	MG/KG	7.43
S242	S242-0"	1/29/08	0	0.5	Area 2	MG/KG	9.47
S243	S243-0"	1/29/08	0	0.5	Area 2	MG/KG	3.05
S244	S244-0"	1/28/08	0	0.5	Area 2	MG/KG	8.26
S245	S245-0"	1/28/08	0	0.5	Area 2	MG/KG	3.95
S246	S246-0"	1/29/08	0	0.5	Area 2	MG/KG	6.09
S247	S247-0"	1/29/08	0	0.5	Area 2	MG/KG	6.66
S248	S248-0"	1/28/08	0	0.5	Area 2	MG/KG	6.72

Table A2
Results of Arsenic Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Arsenic
S249	S249-0"	1/28/08	0	0.5	Area 2	MG/KG	9.6
S250	S250-0"	1/28/08	0	0.5	Area 2	MG/KG	2.66
S250	S250-12"	1/30/08	1	1.5	Area 2	MG/KG	5.16
S251	S251-0"	1/28/08	0	0.5	Area 2	MG/KG	8.99
S251	S251-6"	1/20/09	0.5	1	Area 2	MG/KG	7.83
S252	S252-0"	1/29/08	0	0.5	Area 2	MG/KG	8.69
S253	S253-0"	1/29/08	0	0.5	Area 2	MG/KG	11.1
S254	S254-0"	1/29/08	0	0.5	Area 2	MG/KG	11.1
S254	S254-12"	1/30/08	1	1.5	Area 2	MG/KG	11.1
S255	S255-0"	1/29/08	0	0.5	Area 2	MG/KG	5.7
S256	S256-0"	1/31/08	0	0.5	Area 2	MG/KG	8.98
S257	S257-0"	1/3/08	0	0.5	Area 2	MG/KG	7.82
S258	S258-0"	1/3/08	0	0.5	Area 2	MG/KG	5.63
S259	S259-0"	1/31/08	0	0.5	Area 2	MG/KG	7.14
S260	S260-0"	1/3/08	0	0.5	Area 2	MG/KG	3.74
S261	S261-0"	12/21/07	0	0.5	Area 3	MG/KG	2.46
S262	S262-0"	12/13/07	0	0.5	Area 3	MG/KG	8.88
S263	S263-0"	2/1/08	0	0.5	Area 3	MG/KG	5.5
S264	S264-0"	1/3/08	0	0.5	Area 3	MG/KG	3.78
S264	S264-12"	1/3/08	1	1.5	Area 3	MG/KG	5.84
S265	S265-6"	1/20/09	0.5	1	Area 3	MG/KG	5.59
S266	S266-0"	12/14/07	0	0.5	Area 3	MG/KG	6.81
S267	S267-0"	1/4/08	0	0.5	Area 3	MG/KG	5.32
S268	S268-0"	1/2/08	0	0.5	Area 3	MG/KG	9.97
S268	S268-12"	1/2/08	1	1.5	Area 3	MG/KG	9.46
S269	S269-0"	12/4/07	0	0.5	Area 3	MG/KG	6.66
S270	S270-0"	12/17/07	0	0.5	Area 4	MG/KG	9.34
S271	S271-0"	1/4/08	0	0.5	Area 1	MG/KG	8.09
S272	S272-0"	11/28/07	0	0.5	Area 1	MG/KG	1.46
S273	S273-0"	11/28/07	0	0.5	Area 1	MG/KG	4.71
S274	S274-0"	11/29/07	0	0.5	Area 1	MG/KG	5.32
S274	S274-12"	11/29/07	1	1.5	Area 1	MG/KG	6.9
S275	S275-0"	11/29/07	0	0.5	Area 3	MG/KG	4.22
S275	S275-12"	11/29/07	1	1.5	Area 3	MG/KG	6.36
S276	S276-0"	11/29/07	0	0.5	Area 1	MG/KG	5.51
S277	S277-0"	1/31/08	0	0.5	Area 2	MG/KG	15.2
S278	S278-0"	1/31/08	0	0.5	Area 2	MG/KG	10.3
S279	S279-0"	12/20/07	0	0.5	Area 2	MG/KG	7.33
S279	S279-12"	12/20/07	1	1.5	Area 2	MG/KG	4.89
S280	S280-0"	1/3/08	0	0.5	Area 2	MG/KG	5.01
S281	S281-0"	2/1/08	0	0.5	Area 2	MG/KG	7.58
S282	S282-6"	1/20/09	0.5	1	Area 2	MG/KG	7.05
S282	S282-12"	1/20/09	1	1.5	Area 2	MG/KG	6.4
S283	S283-0"	1/29/08	0	0.5	Area 2	MG/KG	9.82
S284	S284-0"	1/29/08	0	0.5	Area 2	MG/KG	6.31
S284	S284-12"	1/30/08	1	1.5	Area 2	MG/KG	8.53
S285	S285-0"	11/28/07	0	0.5	Area 1	MG/KG	1.76
S286	S286-0"	11/26/07	0	0.5	Area 1	MG/KG	12.7
S287	S287-0"	11/26/07	0	0.5	Area 1	MG/KG	5.64
S287	S287-12"	11/26/07	1	1.5	Area 1	MG/KG	6.3

Table A2
Results of Arsenic Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Arsenic
S288	S288-0"	11/26/07	0	0.5	Area 1	MG/KG	10.2
S289	S289-0"	11/26/07	0	0.5	Area 1	MG/KG	4.97
S290	S290-0"	11/26/07	0	0.5	Area 1	MG/KG	5.45
S291	S291-0"	1/7/08	0	0.5	Area 4	MG/KG	9.35
S292	S292-6''	1/19/09	0.5	1	Area 1	MG/KG	1.13
S293	S293-0"	11/26/07	0	0.5	Area 1	MG/KG	5.66
S293	S293-24"	11/26/07	2	2.5	Area 1	MG/KG	2.92
S294	S294-0"	11/26/07	0	0.5	Area 1	MG/KG	5.87
S295	S295-6"	11/26/07	0.5	1	Area 1	MG/KG	4.82
S296	S296-0"	11/28/07	0	0.5	Area 1	MG/KG	<0.848
S296	S296-18"	11/28/07	1.5	2	Area 1	MG/KG	<0.872
S297	S297-6"	1/20/09	0.5	1	Area 3	MG/KG	4.44
S297	S297-12"	1/20/09	1	1.5	Area 3	MG/KG	9.91
S298	S298-0	12/4/07	0	0.5	Area 4	MG/KG	9.52

Notes
MG/KG milligrams per kilogram

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B001	B001-2	12/5/05	2	3	Area 1	UG/KG	<6.25
B001	B001-5	12/5/05	5	6	Area 1	UG/KG	2.25
B001	B001-10	12/5/05	10	11	Area 1	UG/KG	<6.25
B002	B002-2	12/5/05	2	3	Area 1	UG/KG	<6.25
B002	B002-5	12/5/05	5	6	Area 1	UG/KG	<6.25
B002	B002-10	12/5/05	10	11	Area 1	UG/KG	<6.25
B003	B003-2	12/7/05	2	3	Area 1	UG/KG	<6.25
B003	B003-5	12/7/05	5	6	Area 1	UG/KG	<6.25
B004	B004-2	12/8/05	2	3	Area 1	UG/KG	<6.25
B004	B004-5	12/8/05	5	6	Area 1	UG/KG	<6.25
B004	B004-10	12/8/05	10	11	Area 1	UG/KG	<6.25
B005	B005-2	12/8/05	2	3	Area 1	UG/KG	<6.25
B005	B005-5	12/8/05	5	6	Area 1	UG/KG	<6.25
B005	B005-10	12/8/05	10	11	Area 1	UG/KG	<6.25
B006	B006-2	12/12/05	2	3	Area 1	UG/KG	<6.25
B006	B006-5	12/12/05	5	6	Area 1	UG/KG	<6.25
B006	B006-10	12/12/05	10	11	Area 1	UG/KG	1.25
B007	B007-2	12/12/05	2	3	Area 1	UG/KG	<6.25
B007	B007-5	12/12/05	5	6	Area 1	UG/KG	<6.25
B007	B007-10	12/12/05	10	11	Area 1	UG/KG	<6.25
B008	B008-2	12/8/05	2	3	Area 1	UG/KG	<6.25
B008	B008-5	12/8/05	5	6	Area 1	UG/KG	<6.25
B008	B008-10	12/8/05	10	11	Area 1	UG/KG	<6.25
B009	B009-2	12/9/05	2	3	Area 1	UG/KG	<6.25
B009	B009-5	12/9/05	5	6	Area 1	UG/KG	<6.25
B009	B009-10	12/9/05	10	11	Area 1	UG/KG	<6.25
B010	B010-2	12/9/05	2	3	Area 4	UG/KG	<6.25
B010	B010-5	12/9/05	5	6	Area 4	UG/KG	<6.25
B010	B010-10	12/9/05	10	11	Area 4	UG/KG	<6.25
B011	B011-2	1/9/06	2	3	Area 1	UG/KG	<6.25
B011	B011-5	1/9/06	5	6	Area 1	UG/KG	<6.25
B011	B011-10	1/9/06	10	11	Area 1	UG/KG	<6.25
B012	B012-2	1/6/06	2	3	Area 1	UG/KG	<6.25
B012	B012-5	1/6/06	5	6	Area 1	UG/KG	4
B012	B012-10	1/6/06	10	11	Area 1	UG/KG	<6.25
B013	B013-2	12/15/05	2	3	Area 1	UG/KG	<6.25
B013	B013-5	12/15/05	5	6	Area 1	UG/KG	<6.25
B013	B013-10	12/15/05	10	11	Area 1	UG/KG	<6.25
B014	B014-2	12/13/05	2	3	Area 1	UG/KG	<6.25
B014	B014-5	12/13/05	5	6	Area 1	UG/KG	<6.25
B014	B014-10	12/13/05	10	11	Area 1	UG/KG	<6.25
B015	B015-2	12/12/05	2	3	Area 1	UG/KG	<6.25
B015	B015-5	12/12/05	5	6	Area 1	UG/KG	<6.25
B015	B015-10	12/12/05	10	11	Area 1	UG/KG	1.625
B016	B016-2	12/13/05	2	3	Area 1	UG/KG	<6.25
B016	B016-5	12/13/05	5	6	Area 1	UG/KG	<6.25
B016	B016-10	12/13/05	10	11	Area 1	UG/KG	<6.25
B017	B017-2	12/29/05	2	3	Area 1	UG/KG	<6.25
B017	B017-5	12/29/05	5	6	Area 1	UG/KG	<6.25
B017	B017-10	12/29/05	10	11	Area 1	UG/KG	1.25
B018	B018-2	12/29/05	2	3	Area 1	UG/KG	<6.25
B018	B018-5	12/29/05	5	6	Area 1	UG/KG	<6.25
B018	B018-10	12/29/05	10	11	Area 1	UG/KG	1.25

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B019	B019-2	12/28/05	2	3	Area 1	UG/KG	<6.25
B019	B019-5	12/28/05	5	6	Area 1	UG/KG	<6.25
B019	B019-10	12/28/05	10	11	Area 1	UG/KG	3.375
B020	B020-2	12/12/05	2	3	Area 1	UG/KG	<6.25
B020	B020-5	12/12/05	5	6	Area 1	UG/KG	<6.25
B020	B020-10	12/12/05	10	11	Area 1	UG/KG	<625
B021	B021-2	12/28/05	2	3	Area 4	UG/KG	3.75
B021	B021-5	12/28/05	5	6	Area 4	UG/KG	<6.25
B021	B021-10	12/28/05	10	11	Area 4	UG/KG	9050
B022	B022-2	12/28/05	2	3	Area 3	UG/KG	<275
B022	B022-5	12/28/05	5	6	Area 3	UG/KG	<12375
B022	B022-10	12/28/05	10	11	Area 3	UG/KG	286.25
B023	B023-2	12/28/05	2	3	Area 1	UG/KG	<24062.5
B023	B023-5	12/28/05	5	6	Area 1	UG/KG	1186.25
B023	B023-10	12/28/05	10	11	Area 1	UG/KG	7750
B024	B024-2	12/16/05	2	2.5	Area 1	UG/KG	<343.75
B024	B024-5	12/16/05	5	6	Area 1	UG/KG	<487.5
B024	B024-10	12/16/05	10	11	Area 1	UG/KG	47.5
B025	B025-2	12/15/05	2	3	Area 1	UG/KG	3.875
B025	B025-5	12/15/05	5	6	Area 1	UG/KG	<6.25
B025	B025-10	12/15/05	10	11	Area 1	UG/KG	1.5
B026	B026-2	12/15/05	2	3	Area 1	UG/KG	<6.25
B026	B026-5	12/15/05	5	6	Area 1	UG/KG	<6.25
B026	B026-10	12/15/05	10	11	Area 1	UG/KG	1.75
B027	B027-2	12/14/05	2	3	Area 1	UG/KG	<6.25
B027	B027-5	12/15/05	5	6	Area 1	UG/KG	<6.25
B027	B027-10	12/15/05	10	11	Area 1	UG/KG	<6.25
B028	B028-2	12/13/05	2	3	Area 1	UG/KG	<6.25
B028	B028-5	12/13/05	5	6	Area 1	UG/KG	5
B028	B028-10	12/13/05	10	11	Area 1	UG/KG	<6.25
B029	B029-2	12/14/05	2	3	Area 1	UG/KG	420
B029	B029-5	12/14/05	5	6	Area 1	UG/KG	<6.25
B029	B029-10	12/14/05	10	11	Area 1	UG/KG	2.25
B030	B030-2	12/14/05	2	3	Area 1	UG/KG	<6.25
B030	B030-5	12/14/05	5	6	Area 1	UG/KG	<6.25
B030	B030-10	12/14/05	10	11	Area 1	UG/KG	<6.25
B031	B031-2	1/6/06	2	3	Area 1	UG/KG	3
B031	B031-5	1/6/06	5	6	Area 1	UG/KG	<6.25
B031	B031-10	1/6/06	10	11	Area 1	UG/KG	<6.25
B032	B032-2	1/6/06	2	3	Area 1	UG/KG	<6.25
B032	B032-5	1/6/06	5	6	Area 1	UG/KG	<506.25
B032	B032-10	1/6/06	10	11	Area 1	UG/KG	<6.25
B033	B033-2	12/29/05	2	3	Area 1	UG/KG	<6.25
B033	B033-5	12/29/05	5	6	Area 1	UG/KG	<6.25
B033	B033-10	12/29/05	10	11	Area 1	UG/KG	<287.5
B034	B034-2	12/14/05	2	3	Area 1	UG/KG	<6.25
B034	B034-5	12/14/05	5	6	Area 1	UG/KG	<6.25
B034	B034-10	12/14/05	10	11	Area 1	UG/KG	<6.25
B035	B035-2	12/14/05	2	3	Area 1	UG/KG	<6.25
B035	B035-5	12/14/05	5	6	Area 1	UG/KG	<6.25
B035	B035-10	12/14/05	10	11	Area 1	UG/KG	<6.25
B036	B036-2	12/14/05	2	3	Area 1	UG/KG	<6.25
B036	B036-5	12/14/05	5	6	Area 1	UG/KG	<6.25

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B036	B036-10	12/14/05	10	11	Area 1	UG/KG	<6.25
B037	B037-2	12/19/05	2	3	Area 1	UG/KG	<6.25
B037	B037-5	12/19/05	5	6	Area 1	UG/KG	<6.25
B037	B037-10	12/19/05	10	11	Area 1	UG/KG	<6.25
B038	B038-2	12/19/05	2	3	Area 1	UG/KG	<256.25
B038	B038-5	12/19/05	5	6	Area 1	UG/KG	18.75
B038	B038-10	12/19/05	10	11	Area 1	UG/KG	<262.5
B039	B039-2	12/16/05	2	3	Area 1	UG/KG	<6.25
B039	B039-5	12/16/05	5	6	Area 1	UG/KG	<6.25
B039	B039-10	12/16/05	10	11	Area 1	UG/KG	<6.25
B040	B040-2	12/19/05	2	3	Area 1	UG/KG	1.5
B040	B040-5	12/19/05	5	6	Area 1	UG/KG	<6.25
B040	B040-10	12/19/05	10	11	Area 1	UG/KG	12.5
B041	B041-2	12/28/05	2	3	Area 3	UG/KG	<6.25
B041	B041-5	12/28/05	5	6	Area 3	UG/KG	<6.25
B041	B041-10	12/28/05	10	11	Area 3	UG/KG	32.5
B042	B042-2	12/20/05	2	3	Area 3	UG/KG	<1250
B042	B042-5	12/20/05	5	6	Area 3	UG/KG	<625
B042	B042-10	12/20/05	10	11	Area 3	UG/KG	5.125
B043	B043-2	12/16/05	2	3	Area 1	UG/KG	<6.25
B043	B043-5	12/16/05	5	6	Area 1	UG/KG	115
B043	B043-10	12/16/05	10	11	Area 1	UG/KG	231.25
B044	B044-2	12/16/05	2	3	Area 1	UG/KG	3.375
B044	B044-5	12/16/05	5	6	Area 1	UG/KG	2.375
B044	B044-10	12/16/05	10	11	Area 1	UG/KG	4.375
B045	B045-2	12/15/05	2	3	Area 1	UG/KG	15750
B045	B045-5	12/15/05	5	6	Area 1	UG/KG	2525
B045	B045-10	12/15/05	10	11	Area 1	UG/KG	5750
B046	B046-2	12/15/05	2	3	Area 1	UG/KG	<6.25
B046	B046-5	12/15/05	5	6	Area 1	UG/KG	<6.25
B046	B046-10	12/15/05	10	11	Area 1	UG/KG	20
B047	B047-2	12/15/05	2	3	Area 1	UG/KG	<6.25
B047	B047-5	12/15/05	5	6	Area 1	UG/KG	<6.25
B047	B047-10	12/15/05	10	11	Area 1	UG/KG	<6.25
B048	B048-2	12/20/05	2	3	Area 1	UG/KG	<6.25
B048	B048-5	12/20/05	5	6	Area 1	UG/KG	<625
B048	B048-10	12/20/05	10	11	Area 1	UG/KG	<625
B049	B049-2	12/14/05	2	3	Area 1	UG/KG	16.25
B049	B049-5	12/14/05	5	6	Area 1	UG/KG	18.75
B049	B049-10	12/14/05	10	11	Area 1	UG/KG	30
B050	B050-2	12/13/05	2	3	Area 1	UG/KG	<6.25
B050	B050-5	12/13/05	5	6	Area 1	UG/KG	<6.25
B050	B050-10	12/12/05	10	11	Area 1	UG/KG	<6.25
B051	B051-2	12/13/05	2	3	Area 1	UG/KG	<6.25
B051	B051-5	12/13/05	5	6	Area 1	UG/KG	<6.25
B051	B051-10	12/13/05	10	11	Area 1	UG/KG	<6.25
B052	B052-2	12/29/05	2	3	Area 1	UG/KG	1.5
B052	B052-5	12/29/05	5	6	Area 1	UG/KG	<6.25
B052	B052-10	12/29/05	10	11	Area 1	UG/KG	<6.25
B053	B053-2	12/28/05	2	3	Area 1	UG/KG	<6.25
B053	B053-5	12/28/05	5	6	Area 1	UG/KG	<6.25
B053	B053-10	12/28/05	10	11	Area 1	UG/KG	<6.25
B054	B054-2	12/13/05	2	3	Area 1	UG/KG	<6.25

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B054	B054-5	12/13/05	5	6	Area 1	UG/KG	<6.25
B054	B054-10	12/13/05	10	11	Area 1	UG/KG	<6.25
B055	B055-2	12/21/05	2	3	Area 1	UG/KG	825
B055	B055-5	12/21/05	5	6	Area 1	UG/KG	<1268.75
B055	B055-10	12/21/05	10	11	Area 1	UG/KG	413.75
B056	B056-2	12/14/05	2	3	Area 1	UG/KG	135
B056	B056-5	12/14/05	5	6	Area 1	UG/KG	151.25
B056	B056-10	12/14/05	10	11	Area 1	UG/KG	1.75
B057	B057-2	12/13/05	2	3	Area 1	UG/KG	<6.25
B057	B057-5	12/13/05	5	6	Area 1	UG/KG	<6.25
B057	B057-10	12/13/05	10	11	Area 1	UG/KG	2.875
B058	B058-2	12/20/05	2	3	Area 1	UG/KG	<6250
B058	B058-5	12/20/05	5	6	Area 1	UG/KG	<1250
B058	B058-10	12/20/05	10	11	Area 1	UG/KG	<1250
B059	B059-2	12/20/05	2	3	Area 1	UG/KG	<6.25
B059	B059-5	12/20/05	5	6	Area 1	UG/KG	<6.25
B059	B059-10	12/20/05	10	11	Area 1	UG/KG	<6.25
B060	B060-2	12/20/05	2	3	Area 1	UG/KG	<6.25
B060	B060-5	12/20/05	5	6	Area 1	UG/KG	<625
B060	B060-10	12/20/05	10	11	Area 1	UG/KG	<625
B061	B061-2	12/20/05	2	3	Area 1	UG/KG	<6.25
B061	B061-5	12/20/05	5	6	Area 1	UG/KG	<6.25
B061	B061-10	12/20/05	10	11	Area 1	UG/KG	<6.25
B062	B062-2	12/21/05	2	3	Area 1	UG/KG	<6.25
B062	B062-5	12/21/05	5	6	Area 1	UG/KG	<6.25
B062	B062-10	12/21/05	10	11	Area 1	UG/KG	<6.25
B063	B063-2	1/9/06	2	3	Area 3	UG/KG	<6.25
B063	B063-5	1/9/06	5	6	Area 3	UG/KG	<6.25
B063	B063-10	1/9/06	10	11	Area 3	UG/KG	<6.25
B064	B064-2	12/23/05	2	3	Area 1	UG/KG	<6.25
B064	B064-5	12/23/05	5	6	Area 1	UG/KG	<6.25
B064	B064-10	12/23/05	10	11	Area 1	UG/KG	<6.25
B065	B065-2	1/12/06	2	3	Area 1	UG/KG	<6.25
B065	B065-5	1/12/06	5	6	Area 1	UG/KG	<6.25
B065	B065-10	1/12/06	10	11	Area 1	UG/KG	<6.25
B066	B066-2	1/12/06	2	3	Area 1	UG/KG	<6.25
B066	B066-5	1/12/06	5	6	Area 1	UG/KG	<6.25
B066	B066-10	1/12/06	10	11	Area 1	UG/KG	<6.25
B067	B067-2	12/21/05	2	3	Area 1	UG/KG	2.25
B067	B067-5	12/21/05	5	6	Area 1	UG/KG	<756.25
B067	B067-10	12/21/05	10	11	Area 1	UG/KG	<6.25
B068	B068-2	12/21/05	2	3	Area 1	UG/KG	2.625
B068	B068-5	12/21/05	5	6	Area 1	UG/KG	<1262.5
B068	B068-10	12/21/05	10	11	Area 1	UG/KG	<587.5
B069	B069-2	12/22/05	2	3	Area 1	UG/KG	<6.25
B069	B069-5	12/22/05	5	6	Area 1	UG/KG	<6.25
B069	B069-10	12/22/05	10	11	Area 1	UG/KG	<6.25
B070	B070-2	12/22/05	2	3	Area 1	UG/KG	<6.25
B070	B070-5	12/22/05	5	6	Area 1	UG/KG	<6.25
B070	B070-10	12/22/05	10	11	Area 1	UG/KG	<625
B071	B071-2	12/21/05	2	3	Area 1	UG/KG	<6.25
B071	B071-5	12/21/05	5	6	Area 1	UG/KG	<6.25
B071	B071-10	12/21/05	10	11	Area 1	UG/KG	2.25

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B072	B072-2	12/21/05	2	3	Area 1	UG/KG	<343.75
B072	B072-5	12/21/05	5	6	Area 1	UG/KG	6.875
B072	B072-10	12/21/05	10	11	Area 1	UG/KG	<6.25
B073	B073-2	1/30/06	2	3	Area 3	UG/KG	<6.25
B073	B073-5	1/30/06	5	6	Area 3	UG/KG	<6.25
B073	B073-10	1/30/06	10	11	Area 3	UG/KG	<6.25
B074	B074-2	1/11/06	2	3	Area 2	UG/KG	<6.25
B074	B074-5	1/11/06	5	6	Area 2	UG/KG	<625
B074	B074-10	1/11/06	10	11	Area 2	UG/KG	<625
B075	B075-2	1/11/06	2	3	Area 1	UG/KG	<6.25
B075	B075-5	1/11/06	5	6	Area 1	UG/KG	<6.25
B075	B075-10	1/11/06	10	11	Area 1	UG/KG	<6.25
B076	B076-2	12/22/05	2	3	Area 2	UG/KG	<625
B076	B076-5	12/22/05	5	6	Area 2	UG/KG	<6.25
B076	B076-10	12/22/05	10	11	Area 2	UG/KG	<625
B077	B077-2	12/23/05	2	3	Area 2	UG/KG	58.75
B077	B077-5	12/23/05	5	6	Area 2	UG/KG	1.625
B077	B077-10	12/23/05	10	11	Area 2	UG/KG	13.75
B078	B078-2	12/23/05	2	3	Area 2	UG/KG	<6.25
B078	B078-5	12/23/05	5	6	Area 2	UG/KG	<6.25
B078	B078-10	12/23/05	10	11	Area 2	UG/KG	<6.25
B079	B079-2	12/23/05	2	3	Area 2	UG/KG	<6.25
B079	B079-5	12/23/05	5	6	Area 2	UG/KG	<6.25
B079	B079-10	12/23/05	10	11	Area 2	UG/KG	<6.25
B080	B080-2	12/22/05	2	3	Area 1	UG/KG	<6.25
B080	B080-5	12/22/05	5	6	Area 1	UG/KG	<6.25
B080	B080-10	12/22/05	10	11	Area 1	UG/KG	<6.25
B081	B081-2	12/22/05	2	3	Area 1	UG/KG	<6.25
B081	B081-5	12/22/05	5	6	Area 1	UG/KG	<6.25
B081	B081-10	12/22/05	10	11	Area 1	UG/KG	<6.25
B082	B082-2	12/23/05	2	3	Area 1	UG/KG	<6.25
B082	B082-5	12/23/05	5	6	Area 1	UG/KG	<6.25
B082	B082-10	12/23/05	10	11	Area 1	UG/KG	<6.25
B083	B083-2	1/4/06	2	3	Area 2	UG/KG	<256.25
B083	B083-5	1/4/06	5	6	Area 2	UG/KG	<6.25
B083	B083-10	1/4/06	10	11	Area 2	UG/KG	<6.25
B084	B084-2	1/5/06	2	3	Area 2	UG/KG	<6.25
B084	B084-5	1/5/06	5	6	Area 2	UG/KG	<6.25
B084	B084-10	1/5/06	10	11	Area 2	UG/KG	<6.25
B085	B085-2	12/28/05	2	3	Area 2	UG/KG	<6.25
B085	B085-5	12/28/05	5	6	Area 2	UG/KG	<6.25
B085	B085-10	12/28/05	10	11	Area 2	UG/KG	<6.25
B086	B086-2	1/11/06	2	3	Area 2	UG/KG	<6.25
B086	B086-5	1/11/06	5	6	Area 2	UG/KG	1.25
B086	B086-10	1/11/06	10	11	Area 2	UG/KG	<6.25
B087	B087-2	1/11/06	2	3	Area 2	UG/KG	<6.25
B087	B087-5	1/11/06	5	6	Area 2	UG/KG	<6250
B087	B087-10	1/11/06	10	11	Area 2	UG/KG	<6.25
B088	B088-2	1/18/06	2	3	Area 2	UG/KG	<6.25
B088	B088-5	1/18/06	5	6	Area 2	UG/KG	<6.25
B088	B088-10	1/18/06	10	11	Area 2	UG/KG	<6.25
B089	B089-2	1/9/06	2	3	Area 2	UG/KG	<6.25
B089	B089-5	1/9/06	5	6	Area 2	UG/KG	<1262.5

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B089	B089-10	1/9/06	10	11	Area 2	UG/KG	1.75
B090	B090-2	1/10/06	2	3	Area 2	UG/KG	<6.25
B090	B090-5	1/10/06	5	6	Area 2	UG/KG	<6.25
B090	B090-10	1/10/06	10	11	Area 2	UG/KG	<6.25
B091	B091-2	1/10/06	2	3	Area 2	UG/KG	<6.25
B091	B091-5	1/10/06	5	6	Area 2	UG/KG	6.5
B091	B091-10	1/10/06	10	11	Area 2	UG/KG	<6.25
B092	B092-2	1/5/06	2	3	Area 2	UG/KG	<6.25
B092	B092-5	1/5/06	5	6	Area 2	UG/KG	2.625
B092	B092-10	1/5/06	10	11	Area 2	UG/KG	<6.25
B093	B093-2	1/5/06	2	3	Area 2	UG/KG	<6.25
B093	B093-5	1/5/06	5	6	Area 2	UG/KG	<6.25
B093	B093-10	1/5/06	10	11	Area 2	UG/KG	<6.25
B094	B094-2	1/5/06	2	3	Area 2	UG/KG	<6.25
B094	B094-5	1/5/06	5	6	Area 2	UG/KG	<6.25
B094	B094-10	1/5/06	10	11	Area 2	UG/KG	<6.25
B095	B095-2	1/4/06	2	3	Area 2	UG/KG	<6.25
B095	B095-5	1/4/06	5	6	Area 2	UG/KG	2.875
B095	B095-10	1/4/06	10	11	Area 2	UG/KG	<6.25
B096	B096-2	12/28/05	2	3	Area 2	UG/KG	<6.25
B096	B096-5	12/28/05	5	6	Area 2	UG/KG	<6.25
B096	B096-10	12/28/05	10	11	Area 2	UG/KG	<6.25
B097	B097-2	1/5/06	2	3	Area 2	UG/KG	<6.25
B097	B097-5	1/5/06	5	6	Area 2	UG/KG	<6.25
B097	B097-10	1/5/06	10	11	Area 2	UG/KG	<6.25
B098	B098-2	1/4/06	2	3	Area 2	UG/KG	<256.25
B098	B098-5	1/4/06	5	6	Area 2	UG/KG	1.75
B098	B098-10	1/4/06	10	11	Area 2	UG/KG	<6.25
B099	B099-2	1/3/06	2	3	Area 2	UG/KG	<6.25
B099	B099-5	1/3/06	5	6	Area 2	UG/KG	<6.25
B099	B099-10	1/3/06	10	11	Area 2	UG/KG	<6.25
B100	B100-2	1/10/06	2	3	Area 2	UG/KG	<243.75
B100	B100-5	1/10/06	5	6	Area 2	UG/KG	<6.25
B100	B100-10	1/10/06	10	11	Area 2	UG/KG	<6.25
B101	B101-2	1/10/06	2	3	Area 2	UG/KG	<6.25
B101	B101-5	1/10/06	5	6	Area 2	UG/KG	<6.25
B101	B101-10	1/10/06	10	11	Area 2	UG/KG	<6.25
B102	B102-2	1/9/06	2	3	Area 2	UG/KG	<6.25
B102	B102-5	1/9/06	5	6	Area 2	UG/KG	<6.25
B102	B102-10	1/9/06	10	11	Area 2	UG/KG	<6.25
B103	B103-2	1/6/06	2	3	Area 2	UG/KG	<6.25
B103	B103-5	1/6/06	5	6	Area 2	UG/KG	<6.25
B103	B103-10	1/6/06	10	11	Area 2	UG/KG	9.875
B104	B104-2	2/3/06	2	3	Area 2	UG/KG	<6.25
B104	B104-5	2/3/06	5	6	Area 2	UG/KG	<6.25
B104	B104-10	2/3/06	10	11	Area 2	UG/KG	<6.25
B105	B105-2	1/10/06	2	3	Area 2	UG/KG	<6.25
B105	B105-5	1/10/06	5	6	Area 2	UG/KG	<6.25
B105	B105-10	1/10/06	10	11	Area 2	UG/KG	<6.25
B106	B106-2	12/29/05	2	3	Area 2	UG/KG	1.875
B106	B106-5	12/29/05	5	6	Area 2	UG/KG	2.875
B106	B106-10	12/29/05	10	10.5	Area 2	UG/KG	3.25
B107	B107-2	1/4/06	2	3	Area 2	UG/KG	<6.25

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B107	B107-5	1/4/06	5	6	Area 2	UG/KG	1.5
B107	B107-10	1/4/06	10	11	Area 2	UG/KG	<6.25
B108	B108-2	1/9/06	2	3	Area 2	UG/KG	4
B108	B108-5	1/9/06	5	6	Area 2	UG/KG	<6.25
B108	B108-10	1/9/06	10	11	Area 2	UG/KG	<6.25
B109	B109-2	1/4/06	2	3	Area 2	UG/KG	<6.25
B109	B109-5	1/4/06	5	6	Area 2	UG/KG	<6.25
B109	B109-10	1/4/06	10	11	Area 2	UG/KG	<6.25
B110	B110-2	12/28/05	2	3	Area 2	UG/KG	<6.25
B110	B110-5	12/28/05	5	6	Area 2	UG/KG	46.25
B110	B110-10	12/28/05	10	11	Area 2	UG/KG	<6.25
B111	B111-2	12/28/05	2	3	Area 2	UG/KG	<6.25
B111	B111-5	12/28/05	5	6	Area 2	UG/KG	1.25
B111	B111-10	12/28/05	10	11	Area 2	UG/KG	<6.25
B112	B112-2	12/29/05	2	3	Area 2	UG/KG	1.875
B112	B112-5	12/29/05	5	6	Area 2	UG/KG	<6.25
B112	B112-10	12/29/05	10	11	Area 2	UG/KG	<6.25
B113	B113-2	12/29/05	2	3	Area 2	UG/KG	<6.25
B113	B113-5	12/29/05	5	6	Area 2	UG/KG	<6.25
B113	B113-10	12/29/05	10	11	Area 2	UG/KG	<6.25
B114	B114-2	1/3/06	2	3	Area 2	UG/KG	2.25
B114	B114-5	1/3/06	5	6	Area 2	UG/KG	<6.25
B114	B114-10	1/3/06	10	11	Area 2	UG/KG	1.375
B115	B115-2	1/3/06	2	3	Area 2	UG/KG	<6.25
B115	B115-5	1/3/06	5	6	Area 2	UG/KG	<6.25
B115	B115-10	1/3/06	10	11	Area 2	UG/KG	<625
B116	B116-2	1/4/06	2	3	Area 2	UG/KG	<6.25
B116	B116-5	1/4/06	5	6	Area 2	UG/KG	<6.25
B116	B116-10	1/4/06	10	11	Area 2	UG/KG	<6.25
B117	B117-2	1/6/06	2	3	Area 2	UG/KG	<6.25
B117	B117-5	1/6/06	5	6	Area 2	UG/KG	<6.25
B117	B117-10	1/6/06	10	11	Area 2	UG/KG	<6.25
B118	B118-2	1/6/06	2	3	Area 2	UG/KG	<6.25
B118	B118-5	1/6/06	5	6	Area 2	UG/KG	<6.25
B118	B118-10	1/6/06	10	11	Area 2	UG/KG	<6.25
B119	B119-2	1/27/06	2	3	Area 2	UG/KG	<6.25
B119	B119-5	1/27/06	5	6	Area 2	UG/KG	<6.25
B119	B119-10	1/27/06	10	11	Area 2	UG/KG	<6.25
B120	B120-2	1/30/06	2	3	Area 4	UG/KG	<231.25
B120	B120-5	1/30/06	5	6	Area 4	UG/KG	<6.25
B120	B120-10	1/30/06	10	11	Area 4	UG/KG	<2337.5
B121	B121-2	2/1/06	2	3	Area 4	UG/KG	<6.25
B121	B121-5	2/1/06	5	6	Area 4	UG/KG	50
B121	B121-10	2/1/06	10	11	Area 4	UG/KG	7
B122	B122-2	1/23/06	2	3	Area 4	UG/KG	<6.25
B122	B122-5	1/23/06	5	6	Area 4	UG/KG	367.5
B122	B122-10	1/23/06	10	11	Area 4	UG/KG	18.75
B123	B123-2	1/20/06	2	3	Area 4	UG/KG	3475
B123	B123-5	1/20/06	5	6	Area 4	UG/KG	2137.5
B124	B124-2	1/16/06	2	3	Area 4	UG/KG	37.5
B124	B124-5	1/16/06	5	6	Area 4	UG/KG	35
B124	B124-10	1/16/06	10	11	Area 4	UG/KG	38.75
B125	B125-2	1/20/06	2	3	Area 4	UG/KG	4.75

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B125	B125-5	1/20/06	5	6	Area 4	UG/KG	3.125
B125	B125-10	1/20/06	10	11	Area 4	UG/KG	17.5
B126	B126-2	1/20/06	2	3	Area 4	UG/KG	<6.25
B126	B126-5	1/20/06	5	6	Area 4	UG/KG	<6.25
B126	B126-10	1/20/06	10	11	Area 4	UG/KG	<6.25
B127	B127-2	1/18/06	2	3	Area 4	UG/KG	<6.25
B127	B127-5	1/18/06	5	6	Area 4	UG/KG	<6.25
B127	B127-10	1/18/06	10	11	Area 4	UG/KG	2.375
B128	B128-2	2/1/06	2	3	Area 4	UG/KG	<625
B128	B128-5	2/1/06	5	6	Area 4	UG/KG	<625
B128	B128-10	2/1/06	10	11	Area 4	UG/KG	6.25
B129	B129-2	1/18/06	2	3	Area 4	UG/KG	<6.25
B129	B129-5	1/18/06	5	6	Area 4	UG/KG	<6.25
B129	B129-10	1/18/06	10	11	Area 4	UG/KG	2.75
B130	B130-2	1/19/06	2	3	Area 4	UG/KG	<1562.5
B130	B130-5	1/19/06	5	6	Area 4	UG/KG	<625
B130	B130-10	1/19/06	10	11	Area 4	UG/KG	<6.25
B131	B131-2	1/19/06	2	3	Area 4	UG/KG	<6.25
B131	B131-5	1/19/06	5	6	Area 4	UG/KG	<6.25
B131	B131-10	1/19/06	10	11	Area 4	UG/KG	<6.25
B132	B132-2	1/19/06	2	3	Area 4	UG/KG	<6.25
B132	B132-5	1/19/06	5	6	Area 4	UG/KG	<6.25
B132	B132-10	1/19/06	10	11	Area 4	UG/KG	6
B134	B134-2	1/23/06	2	3	Area 4	UG/KG	<6.25
B134	B134-5	1/23/06	5	6	Area 4	UG/KG	<6.25
B134	B134-10	1/23/06	10	11	Area 4	UG/KG	5.625
B135	B135-2	1/16/06	2	3	Area 4	UG/KG	<6.25
B135	B135-5	1/16/06	5	6	Area 4	UG/KG	3.375
B135	B135-10	1/16/06	10	11	Area 4	UG/KG	2.75
B136	B136-2	1/12/06	2	3	Area 4	UG/KG	783.75
B136	B136-5	1/12/06	5	6	Area 4	UG/KG	105
B136	B136-10	1/12/06	10	11	Area 4	UG/KG	518.75
B137	B137-2	1/13/06	2	3	Area 4	UG/KG	55
B137	B137-5	1/13/06	5	6	Area 4	UG/KG	186.25
B137	B137-10	1/13/06	10	11	Area 4	UG/KG	193.75
B139	B139-2	1/13/06	2	3	Area 4	UG/KG	898.75
B139	B139-5	1/13/06	5	6	Area 4	UG/KG	31.25
B139	B139-10	1/13/06	10	11	Area 4	UG/KG	3.625
B140	B140-2	1/31/06	2	3	Area 4	UG/KG	2.625
B140	B140-5	1/31/06	5	6	Area 4	UG/KG	<6.25
B140	B140-10	1/31/06	10	11	Area 4	UG/KG	5
B141	B141-2	1/30/06	2	3	Area 3	UG/KG	<6.25
B141	B141-5	1/30/06	5	6	Area 3	UG/KG	<300
B141	B141-10	1/30/06	10	11	Area 3	UG/KG	2.25
B142	B142-2	1/31/06	2	3	Area 3	UG/KG	160
B142	B142-5	1/31/06	5	6	Area 3	UG/KG	200
B142	B142-10	1/31/06	10	11	Area 3	UG/KG	10500
B143	B143-2	1/18/06	2	3	Area 3	UG/KG	1.75
B143	B143-5	1/18/06	5	6	Area 3	UG/KG	<6.25
B143	B143-10	1/18/06	10	11	Area 3	UG/KG	<6.25
B144	B144-2	1/13/06	2	3	Area 3	UG/KG	<637.5
B144	B144-5	1/13/06	5	6	Area 3	UG/KG	<318.75
B144	B144-10	1/13/06	10	11	Area 3	UG/KG	4.25

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B145	B145-2	1/19/06	2	3	Area 3	UG/KG	156.25
B145	B145-5	1/19/06	5	6	Area 3	UG/KG	132.5
B145	B145-10	1/19/06	10	11	Area 3	UG/KG	138.75
B146	B146-2	1/27/06	2	3	Area 3	UG/KG	47.5
B146	B146-5	1/27/06	5	6	Area 3	UG/KG	53.75
B146	B146-10	1/27/06	10	11	Area 3	UG/KG	17.5
B147	B147-2	2/1/06	2	3	Area 3	UG/KG	<6250
B147	B147-5	2/1/06	5	6	Area 3	UG/KG	<6250
B147	B147-10	2/1/06	10	11	Area 3	UG/KG	120
B148	B148-2	1/23/06	2	3	Area 3	UG/KG	2925
B148	B148-5	1/23/06	5	6	Area 3	UG/KG	270
B148	B148-10	1/23/06	10	11	Area 3	UG/KG	122.5
B149	B149-2	1/23/06	2	3	Area 3	UG/KG	3450
B149	B149-5	1/23/06	5	6	Area 3	UG/KG	3612.5
B149	B149-10	1/23/06	10	11	Area 3	UG/KG	5512.5
B150	B150-2	1/20/06	2	3	Area 3	UG/KG	<581.25
B150	B150-5	1/20/06	5	6	Area 3	UG/KG	125
B150	B150-10	1/20/06	10	11	Area 3	UG/KG	2562.5
B151	B151-2	1/19/06	2	3	Area 4	UG/KG	<6.25
B151	B151-5	1/19/06	5	6	Area 4	UG/KG	<6.25
B151	B151-10	1/19/06	10	11	Area 4	UG/KG	<6.25
B152	B152-2	1/20/06	2	3	Area 3	UG/KG	<550
B152	B152-5	1/20/06	5	6	Area 3	UG/KG	<237.5
B152	B152-10	1/20/06	10	11	Area 3	UG/KG	5.125
B153	B153-2	1/20/06	2	3	Area 3	UG/KG	<1250
B153	B153-5	1/20/06	5	6	Area 3	UG/KG	<1243.75
B153	B153-10	1/20/06	10	11	Area 3	UG/KG	<1612.5
B154	B154-2	1/16/06	2	3	Area 3	UG/KG	<331.25
B154	B154-5	1/16/06	5	6	Area 3	UG/KG	<6.25
B154	B154-10	1/16/06	10	11	Area 3	UG/KG	1.625
B155	B155-2	1/30/06	2	3	Area 3	UG/KG	490
B155	B155-5	1/30/06	5	6	Area 3	UG/KG	386.25
B155	B155-10	1/30/06	10	11	Area 3	UG/KG	2762.5
B156	B156-2	1/13/06	2	3	Area 3	UG/KG	<287.5
B156	B156-5	1/13/06	5	6	Area 3	UG/KG	7.625
B156	B156-10	1/13/06	10	11	Area 3	UG/KG	3025
B158	B158-2	1/30/06	2	3	Area 3	UG/KG	217.5
B158	B158-5	1/30/06	5	6	Area 3	UG/KG	463.75
B158	B158-10	1/30/06	10	11	Area 3	UG/KG	302.5
B159	B159-2	1/31/06	2	3	Area 3	UG/KG	<6.25
B159	B159-5	1/31/06	5	6	Area 3	UG/KG	<6.25
B159	B159-10	1/31/06	10	11	Area 3	UG/KG	<343.75
B160	B160-2	1/31/06	2	3	Area 3	UG/KG	<6.25
B160	B160-5	1/31/06	5	6	Area 3	UG/KG	<6.25
B160	B160-10	1/31/06	10	11	Area 3	UG/KG	2.25
B161	B161-2	1/13/06	2	3	Area 3	UG/KG	9.5
B161	B161-5	1/13/06	5	6	Area 3	UG/KG	<5150
B161	B161-10	1/13/06	10	11	Area 3	UG/KG	80
B162	B162-2	1/16/06	2	3	Area 3	UG/KG	23.75
B162	B162-5	1/16/06	5	6	Area 3	UG/KG	38.75
B162	B162-10	1/16/06	10	11	Area 3	UG/KG	23.75
B163	B163-2	1/16/06	2	3	Area 3	UG/KG	95
B163	B163-5	1/16/06	5	6	Area 3	UG/KG	227.5

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B163	B163-10	1/16/06	10	11	Area 3	UG/KG	103.75
B164	B164-2	1/16/06	2	3	Area 3	UG/KG	<6.25
B164	B164-5	1/16/06	5	6	Area 3	UG/KG	<6.25
B164	B164-10	1/16/06	10	11	Area 3	UG/KG	<6.25
B165	B165-2	1/23/06	2	3	Area 3	UG/KG	<6.25
B165	B165-5	1/23/06	5	6	Area 3	UG/KG	<6.25
B165	B165-10	1/23/06	10	11	Area 3	UG/KG	15
B166	B166-2	1/24/06	2	3	Area 3	UG/KG	<6.25
B166	B166-5	1/24/06	5	6	Area 3	UG/KG	<6.25
B166	B166-10	1/24/06	10	11	Area 3	UG/KG	8
B167	B167-2	1/17/06	2	3	Area 3	UG/KG	<6.25
B167	B167-5	1/17/06	5	6	Area 3	UG/KG	<6.25
B167	B167-10	1/17/06	10	11	Area 3	UG/KG	<6.25
B168	B168-2	1/17/06	2	3	Area 3	UG/KG	<6.25
B168	B168-5	1/17/06	5	6	Area 3	UG/KG	<6.25
B168	B168-10	1/17/06	10	11	Area 3	UG/KG	1.25
B169	B169-2	1/17/06	2	3	Area 3	UG/KG	<6250
B169	B169-5	1/17/06	5	6	Area 3	UG/KG	30
B169	B169-10	1/17/06	10	11	Area 3	UG/KG	15
B170	B170-2	1/18/06	2	3	Area 3	UG/KG	<231.25
B170	B170-5	1/18/06	5	6	Area 3	UG/KG	10.75
B170	B170-10	1/18/06	10	11	Area 3	UG/KG	1211.25
B171	B171-2	1/11/06	2	3	Area 3	UG/KG	<6250
B171	B171-5	1/11/06	5	6	Area 3	UG/KG	1287.5
B171	B171-10	1/11/06	10	11	Area 3	UG/KG	34375
B172	B172-2	1/12/06	2	3	Area 3	UG/KG	1350
B172	B172-5	1/12/06	5	6	Area 3	UG/KG	122.5
B172	B172-10	1/12/06	10	11	Area 3	UG/KG	85
B173	B173-2	1/12/06	2	3	Area 3	UG/KG	<6.25
B173	B173-5	1/12/06	5	6	Area 3	UG/KG	<6.25
B173	B173-10	1/12/06	10	11	Area 3	UG/KG	1.625
B174	B174-2	1/12/06	2	3	Area 3	UG/KG	<6.25
B174	B174-5	1/12/06	5	6	Area 3	UG/KG	<6.25
B174	B174-10	1/12/06	10	11	Area 3	UG/KG	1.875
B175	B175-2	2/7/06	2	3	Area 3	UG/KG	<6.25
B175	B175-5	2/7/06	5	6	Area 3	UG/KG	1.875
B175	B175-10	2/7/06	10	11	Area 3	UG/KG	4.75
B176	B176-2	2/7/06	2	3	Area 3	UG/KG	<1268.75
B176	B176-5	2/7/06	5	6	Area 3	UG/KG	705
B176	B176-10	2/7/06	10	11	Area 3	UG/KG	427.5
B177	B177-2	2/2/06	2	3	Area 3	UG/KG	<281.25
B177	B177-5	2/2/06	5	6	Area 3	UG/KG	<6.25
B177	B177-10	2/2/06	10	11	Area 3	UG/KG	147.5
B178	B178-2	2/2/06	2	3	Area 3	UG/KG	300
B178	B178-5	2/2/06	5	6	Area 3	UG/KG	126.25
B178	B178-10	2/2/06	10	11	Area 3	UG/KG	131.25
B179	B179-2	1/26/06	2	3	Area 3	UG/KG	<306.25
B179	B179-5	1/26/06	5	6	Area 3	UG/KG	240
B179	B179-10	1/26/06	10	11	Area 3	UG/KG	81.25
B180	B180-2	1/26/06	2	3	Area 3	UG/KG	<6.25
B180	B180-5	1/26/06	5	6	Area 3	UG/KG	<6.25
B180	B180-10	1/26/06	10	11	Area 3	UG/KG	<6.25
B181	B181-2	2/6/06	2	3	Area 3	UG/KG	<6.25

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B181	B181-5	2/6/06	5	6	Area 3	UG/KG	<6.25
B181	B181-10	2/6/06	10	11	Area 3	UG/KG	<6.25
B182	B182-2	1/24/06	2	3	Area 3	UG/KG	<6.25
B182	B182-5	1/25/06	5	6	Area 3	UG/KG	<6.25
B182	B182-10	1/25/06	10	11	Area 3	UG/KG	<6.25
B183	B183-2	1/25/06	2	3	Area 3	UG/KG	<6.25
B183	B183-5	1/25/06	5	6	Area 3	UG/KG	<6.25
B183	B183-10	1/25/06	10	11	Area 3	UG/KG	<3125
B184	B184-2	1/25/06	2	3	Area 3	UG/KG	<6.25
B184	B184-5	1/25/06	5	6	Area 3	UG/KG	<6.25
B184	B184-10	1/25/06	10	11	Area 3	UG/KG	<6.25
B185	B185-2	1/26/06	2	3	Area 3	UG/KG	<6.25
B185	B185-5	1/26/06	5	6	Area 3	UG/KG	<6.25
B185	B185-10	1/26/06	10	11	Area 3	UG/KG	<6.25
B186	B186-2	1/27/06	2	3	Area 3	UG/KG	90
B186	B186-5	1/27/06	5	6	Area 3	UG/KG	4.375
B186	B186-10	1/27/06	10	11	Area 3	UG/KG	20
B187	B187-2	1/27/06	2	3	Area 3	UG/KG	140
B187	B187-5	1/27/06	5	6	Area 3	UG/KG	148.75
B187	B187-10	1/27/06	10	11	Area 3	UG/KG	160
B188	B188-2	2/7/06	2	3	Area 2	UG/KG	458.75
B188	B188-5	2/7/06	5	6	Area 2	UG/KG	12300
B188	B188-10	2/7/06	10	11	Area 2	UG/KG	996.25
B189	B189-2	2/7/06	2	3	Area 2	UG/KG	65
B189	B189-5	2/7/06	5	6	Area 2	UG/KG	7.25
B189	B189-10	2/7/06	10	11	Area 2	UG/KG	27.5
B190	B190-2	2/8/06	2	3	Area 2	UG/KG	<6.25
B190	B190-5	2/8/06	5	6	Area 2	UG/KG	<6.25
B190	B190-10	2/8/06	10	11	Area 2	UG/KG	13.75
B191	B191-2	2/1/06	2	3	Area 2	UG/KG	<262.5
B191	B191-5	2/1/06	5	6	Area 2	UG/KG	<293.75
B191	B191-10	2/1/06	10	11	Area 2	UG/KG	91.25
B192	B192-2	2/1/06	2	3	Area 2	UG/KG	31.25
B192	B192-5	2/1/06	5	6	Area 2	UG/KG	22.5
B192	B192-10	2/1/06	10	11	Area 2	UG/KG	51.25
B193	B193-2	2/6/06	2	3	Area 3	UG/KG	<625
B193	B193-5	2/6/06	5	6	Area 3	UG/KG	<625
B193	B193-10	2/6/06	10	11	Area 3	UG/KG	30
B194	B194-2	2/3/06	2	3	Area 3	UG/KG	<787.5
B194	B194-5	2/3/06	5	6	Area 3	UG/KG	5
B194	B194-10	2/3/06	10	11	Area 3	UG/KG	<1193.75
B195	B195-2	2/3/06	2	3	Area 3	UG/KG	<6.25
B195	B195-5	2/3/06	5	6	Area 3	UG/KG	<6.25
B195	B195-10	2/3/06	10	11	Area 3	UG/KG	9.75
B196	B196-2	1/25/06	2	3	Area 3	UG/KG	<6.25
B196	B196-5	1/25/06	5	6	Area 3	UG/KG	<6.25
B196	B196-10	1/25/06	10	11	Area 3	UG/KG	<6.25
B197	B197-2	2/1/06	2	3	Area 3	UG/KG	<6.25
B197	B197-5	2/1/06	5	6	Area 3	UG/KG	<6.25
B197	B197-10	2/1/06	10	11	Area 3	UG/KG	<6.25
B198	B198-2	1/26/06	2	3	Area 3	UG/KG	<6.25
B198	B198-5	1/26/06	5	6	Area 3	UG/KG	<6.25
B198	B198-10	1/26/06	10	11	Area 3	UG/KG	<6.25

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B199	B199-2	1/23/06	2	3	Area 3	UG/KG	31.25
B199	B199-5	1/23/06	5	6	Area 3	UG/KG	<6812.5
B199	B199-10	1/23/06	10	11	Area 3	UG/KG	<281.25
B200	B200-2	1/24/06	2	3	Area 3	UG/KG	<6.25
B200	B200-5	1/24/06	5	6	Area 3	UG/KG	<6.25
B200	B200-10	1/24/06	10	11	Area 3	UG/KG	<6.25
B201	B201-2	1/25/06	2	3	Area 3	UG/KG	<6.25
B201	B201-5	1/25/06	5	6	Area 3	UG/KG	<6.25
B201	B201-10	1/25/06	10	11	Area 3	UG/KG	<6.25
B202	B202-2	1/25/06	2	3	Area 3	UG/KG	2.875
B202	B202-5	1/25/06	5	6	Area 3	UG/KG	<6.25
B202	B202-10	1/25/06	10	11	Area 3	UG/KG	<6.25
B203	B203-2	2/7/06	2	3	Area 3	UG/KG	<468.75
B203	B203-5	2/7/06	5	6	Area 3	UG/KG	<1643.75
B203	B203-10	2/7/06	10	11	Area 3	UG/KG	<2225
B204	B204-2	2/6/06	2	3	Area 3	UG/KG	<6.25
B204	B204-5	2/6/06	5	6	Area 3	UG/KG	<700
B204	B204-10	2/6/06	10	11	Area 3	UG/KG	1.625
B205	B205-2	2/7/06	2	3	Area 3	UG/KG	<6.25
B205	B205-5	2/7/06	5	6	Area 3	UG/KG	<6.25
B205	B205-10	2/7/06	10	11	Area 3	UG/KG	<6.25
B206	B206-2	2/8/06	2	3	Area 2	UG/KG	<6.25
B206	B206-5	2/8/06	5	6	Area 2	UG/KG	<6.25
B206	B206-10	2/8/06	10	11	Area 2	UG/KG	8.75
B207	B207-2	2/8/06	2	3	Area 2	UG/KG	<6.25
B207	B207-5	2/8/06	5	6	Area 2	UG/KG	<6.25
B207	B207-10	2/8/06	10	11	Area 2	UG/KG	<6.25
B208	B208-2	1/31/06	2	3	Area 2	UG/KG	<6.25
B208	B208-5	1/31/06	5	6	Area 2	UG/KG	<6.25
B208	B208-10	1/31/06	10	11	Area 2	UG/KG	<6.25
B209	B209-2	1/31/06	2	3	Area 2	UG/KG	<6.25
B209	B209-5	1/31/06	5	6	Area 2	UG/KG	<6.25
B209	B209-10	1/31/06	10	11	Area 2	UG/KG	3.875
B210	B210-2	1/31/06	2	3	Area 3	UG/KG	2.125
B210	B210-5	1/31/06	5	6	Area 3	UG/KG	1.375
B210	B210-10	1/31/06	10	11	Area 3	UG/KG	6.125
B211	B211-2	2/6/06	2	3	Area 3	UG/KG	8.375
B211	B211-5	2/6/06	5	6	Area 3	UG/KG	3.625
B211	B211-10	2/6/06	10	11	Area 3	UG/KG	<6.25
B212	B212-2	1/24/06	2	3	Area 3	UG/KG	<6.25
B212	B212-5	1/24/06	5	6	Area 3	UG/KG	<6.25
B212	B212-10	1/24/06	10	11	Area 3	UG/KG	<6.25
B213	B213-2	2/6/06	2	3	Area 3	UG/KG	<6.25
B213	B213-5	2/6/06	5	6	Area 3	UG/KG	2.625
B213	B213-10	2/6/06	10	11	Area 3	UG/KG	2.375
B214	B214-2	1/23/06	2	3	Area 3	UG/KG	<256.25
B214	B214-5	1/23/06	5	6	Area 3	UG/KG	<6.25
B214	B214-10	1/23/06	10	11	Area 3	UG/KG	<6.25
B215	B215-2	2/3/06	2	3	Area 3	UG/KG	<6.25
B215	B215-5	2/3/06	5	6	Area 3	UG/KG	<6.25
B215	B215-10	2/3/06	10	11	Area 3	UG/KG	<6.25
B216	B216-2	2/2/06	2	3	Area 3	UG/KG	<6.25
B216	B216-5	2/2/06	5	6	Area 3	UG/KG	<6.25

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B216	B216-10	2/2/06	10	11	Area 3	UG/KG	<6.25
B217	B217-2	1/24/06	2	3	Area 3	UG/KG	<6.25
B217	B217-5	1/24/06	5	6	Area 3	UG/KG	<6.25
B217	B217-10	1/24/06	10	11	Area 3	UG/KG	<6.25
B218	B218-2	2/8/06	2	3	Area 3	UG/KG	<6.25
B218	B218-5	2/8/06	5	6	Area 3	UG/KG	256.25
B218	B218-10	2/8/06	10	11	Area 3	UG/KG	1.5
B219	B219-2	1/26/06	2	3	Area 3	UG/KG	<6.25
B219	B219-5	1/26/06	5	6	Area 3	UG/KG	<6.25
B219	B219-10	1/26/06	10	11	Area 3	UG/KG	2.375
B220	B220-2	1/26/06	2	3	Area 3	UG/KG	<6.25
B220	B220-5	1/26/06	5	6	Area 3	UG/KG	<6.25
B220	B220-10	1/26/06	10	11	Area 3	UG/KG	<6.25
B221	B221-2	1/27/06	2	3	Area 2	UG/KG	<6.25
B221	B221-5	1/27/06	5	6	Area 2	UG/KG	<6.25
B221	B221-10	1/27/06	10	11	Area 2	UG/KG	2
B222	B222-2	2/3/06	2	3	Area 2	UG/KG	<6.25
B222	B222-5	2/3/06	5	6	Area 2	UG/KG	<6.25
B222	B222-10	2/3/06	10	11	Area 2	UG/KG	<6.25
B223	B223-2	2/3/06	2	3	Area 2	UG/KG	<6.25
B223	B223-5	2/3/06	5	6	Area 2	UG/KG	<6.25
B223	B223-10	2/3/06	10	11	Area 2	UG/KG	<6.25
B224	B224-05	1/21/08	5	6	Area 1	UG/KG	<1
B224	B224-10	1/21/08	10	11	Area 1	UG/KG	<0.87
B225	B225-5	1/21/08	5	6	Area 1	UG/KG	<1.1
B225	B225-10	1/21/08	9	10	Area 1	UG/KG	<0.88
B226	B226-5	1/18/08	5	6	Area 1	UG/KG	<0.8
B226	B226-10	1/18/08	9	10	Area 1	UG/KG	28
B227	B227-5	1/21/08	5	6	Area 1	UG/KG	1.4
B227	B227-10	1/21/08	10	11	Area 1	UG/KG	<100
B228	B228-05	1/18/08	5	6	Area 1	UG/KG	<1
B228	B228-10	1/18/08	10	11	Area 1	UG/KG	<61
B229	B229-05	1/18/08	5	6	Area 1	UG/KG	1.9
B229	B229-10	1/18/08	10	11	Area 1	UG/KG	240
B230	B230-5	1/17/08	5	6	Area 1	UG/KG	<0.94
B230	B230-10	1/17/08	9	10	Area 1	UG/KG	<210
B231	B231-5	1/17/08	5	6	Area 1	UG/KG	<0.98
B231	B231-10	1/17/08	9	10	Area 1	UG/KG	<0.85
B232	B232-05	1/21/08	5	6	Area 3	UG/KG	6.5
B232	B232-10	1/21/08	10	11	Area 3	UG/KG	<1.2
B233	B233-05	1/23/08	5	6	Area 4	UG/KG	<0.8
B233	B233-10	1/23/08	10	11	Area 4	UG/KG	<0.93
B234	B234-05	1/23/08	5	6	Area 4	UG/KG	1.1
B234	B234-10	1/23/08	10	11	Area 4	UG/KG	4.2
B235	B235-5	1/25/08	5	6	Area 4	UG/KG	7.3
B235	B235-10	1/25/08	9	10	Area 4	UG/KG	7.2
B236	B236-05	1/22/08	5	6	Area 3	UG/KG	<0.91
B236	B236-10	1/22/08	10	11	Area 3	UG/KG	<0.96
B237	B237-5	1/23/08	5	6	Area 3	UG/KG	2400
B237	B237-10	1/23/08	10	11	Area 3	UG/KG	2100
B238	B238-5	1/25/08	5	6	Area 3	UG/KG	180
B238	B238-10	1/25/08	10	11	Area 3	UG/KG	850
B239	B239-05	1/22/08	5	6	Area 3	UG/KG	3

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B239	B239-10	1/22/08	10	11	Area 3	UG/KG	<1.1
B240	B240-5	1/22/08	5	6	Area 3	UG/KG	<1.1
B240	B240-10	1/22/08	9	10	Area 3	UG/KG	<1.4
B241	B241-5	1/23/08	5	6	Area 3	UG/KG	<3300
B241	B241-10	1/23/08	10	11	Area 3	UG/KG	<3600
B242	B242-05	1/25/08	5	6	Area 3	UG/KG	24000
B242	B242-10	1/25/08	10	11	Area 3	UG/KG	520
B243	B243-05	1/25/08	5	6	Area 3	UG/KG	75
B243	B243-10	1/25/08	10	11	Area 3	UG/KG	1300
B244	B244-05	1/17/08	5	6	Area 1	UG/KG	<0.83
B244	B244-10	1/17/08	10	11	Area 1	UG/KG	<0.97
B245	B245-05	1/15/08	5	6	Area 1	UG/KG	<1
B245	B245-10	1/15/08	10	11	Area 1	UG/KG	1.2
B246	B246-5	1/15/08	5	6	Area 1	UG/KG	<0.94
B246	B246-10	1/15/08	10	11	Area 1	UG/KG	<0.99
B247	B247-05	1/17/08	5	6	Area 1	UG/KG	110
B247	B247-10	1/17/08	10	11	Area 1	UG/KG	150
B248	B248-05	1/15/08	5	6	Area 1	UG/KG	<0.91
B248	B248-10	1/15/08	10	11	Area 1	UG/KG	<0.93
B249	B249-05	1/14/08	5	6	Area 1	UG/KG	6600
B249	B249-10	1/14/08	10	11	Area 1	UG/KG	3000
B250	B250-05	1/16/08	5	6	Area 1	UG/KG	<1
B250	B250-10	1/16/08	10	11	Area 1	UG/KG	<0.98
B251	B251-05	1/16/08	5	6	Area 1	UG/KG	<0.83
B251	B251-10	1/16/08	10	11	Area 1	UG/KG	<0.88
B252	B252-5	1/15/08	5	6	Area 1	UG/KG	<0.9
B252	B252-10	1/15/08	10	11	Area 1	UG/KG	<0.93
B253	B253-05	1/31/08	5	6	Area 4	UG/KG	12
B253	B253-10	1/31/08	10	11	Area 4	UG/KG	4200
B254	B254-05	2/5/08	5	6	Area 4	UG/KG	<1.1
B254	B254-10	2/5/08	10	11	Area 4	UG/KG	2.1
B255	B255-05	1/31/08	5	6	Area 3	UG/KG	<0.81
B255	B255-10	1/31/08	10	11	Area 3	UG/KG	<0.74
B256	B256-05	1/31/08	5	6	Area 3	UG/KG	<1.4
B256	B256-10	1/31/08	10	11	Area 3	UG/KG	3.4
B257	B257-05	1/30/08	5	6	Area 3	UG/KG	520
B257	B257-10	1/30/08	10	11	Area 3	UG/KG	1700
B258	B258-05	1/31/08	5	6	Area 3	UG/KG	<63
B258	B258-10	1/31/08	10	11	Area 3	UG/KG	370
B259	B259-05	2/1/08	5	6	Area 3	UG/KG	<1.4
B259	B259-10	2/1/08	10	11	Area 3	UG/KG	<0.97
B260	B260-05	2/1/08	5	6	Area 3	UG/KG	<1600
B260	B260-10	2/1/08	10	11	Area 3	UG/KG	77
B261	B261-5	1/21/09	4.5	5.5	Area 3	UG/KG	<1
B261	B261-10	1/21/09	9.5	10.5	Area 3	UG/KG	<54
B262	B262-05	1/29/08	5	6	Area 3	UG/KG	<1.8
B262	B262-10	1/29/08	10	11	Area 3	UG/KG	<1.1
B263	B263-05	2/4/08	5	6	Area 3	UG/KG	<1.3
B263	B263-10	2/4/08	10	11	Area 3	UG/KG	<1
B264	B264-5	1/15/08	5	6	Area 1	UG/KG	<0.91
B264	B264-10	1/15/08	10	11	Area 1	UG/KG	2
B266	B266-05	1/14/08	5	6	Area 1	UG/KG	<0.86
B266	B266-10	1/14/08	10	11	Area 1	UG/KG	<1.2

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B267	B267-05	1/15/08	5	6	Area 1	UG/KG	2.9
B267	B267-10	1/15/08	10	11	Area 1	UG/KG	<1
B268	B268-05	2/1/08	5	6	Area 1	UG/KG	<0.97
B268	B268-10	2/1/08	10	11	Area 1	UG/KG	1.3
B270	B270-5	1/20/09	4.5	5.5	Area 3	UG/KG	<1
B270	B270-10	1/20/09	10	11	Area 3	UG/KG	<1.1
B271	B271-5	1/14/08	5	6	Area 1	UG/KG	1.4
B271	B271-10	1/14/08	10	11	Area 1	UG/KG	<1.1
B272	B272-5	1/14/08	5	6	Area 1	UG/KG	<0.95
B272	B272-10	1/14/08	10	11	Area 1	UG/KG	<1
B274	B274-05	1/14/08	5	6	Area 1	UG/KG	<0.93
B274	B274-10	1/14/08	10	11	Area 1	UG/KG	<0.87
B275	B275-5	1/14/08	5	6	Area 1	UG/KG	<0.97
B275	B275-10	1/14/08	10	11	Area 1	UG/KG	<0.8
B276	B276-05	2/4/08	5	6	Area 3	UG/KG	<1.4
B276	B276-10	2/4/08	10	11	Area 3	UG/KG	64
B277	B277-5	1/16/08	5	6	Area 3	UG/KG	<42
B277	B277-10	1/16/08	10	11	Area 3	UG/KG	3.4
B278	B278-5	1/16/08	5	6	Area 1	UG/KG	610
B278	B278-10	1/16/08	10	11	Area 1	UG/KG	69
B279	B279-5	1/16/08	5	6	Area 1	UG/KG	<61
B279	B279-10	1/16/08	10	11	Area 1	UG/KG	<45
B280	B280-5	1/16/08	5	6	Area 1	UG/KG	<51
B280	B280-10	1/16/08	10	11	Area 1	UG/KG	<46
B281	B281-5	1/14/08	5	6	Area 1	UG/KG	<0.78
B281	B281-10	1/14/08	10	11	Area 1	UG/KG	<1
B282	B282-05	1/28/08	5	6	Area 1	UG/KG	<1
B282	B282-10	1/28/08	10	11	Area 1	UG/KG	<1
B283	B283-05	1/29/08	5	6	Area 1	UG/KG	<86
B283	B283-10	1/29/08	10	11	Area 1	UG/KG	9.6
B284	B284-05	1/28/08	5	6	Area 2	UG/KG	<0.98
B284	B284-10	1/28/08	10	11	Area 2	UG/KG	<1.1
B285	B285-05	1/28/08	5	6	Area 2	UG/KG	<1.1
B285	B285-10	1/28/08	10	11	Area 2	UG/KG	<1.1
B286	B286-5	1/22/09	5	6	Area 2	UG/KG	<0.96
B286	B286-10	1/22/09	10	11	Area 2	UG/KG	<0.84
B287	B287-5	1/22/08	5	6	Area 2	UG/KG	<1.1
B287	B287-10	1/22/08	10	11	Area 2	UG/KG	<0.89
B288	B288-05	1/17/08	5	6	Area 2	UG/KG	<0.87
B288	B288-10	1/17/08	10	11	Area 2	UG/KG	<0.74
B289	B289-5	1/28/08	5	6	Area 2	UG/KG	<1.4
B289	B289-10	1/28/08	10	11	Area 2	UG/KG	<1.1
B290	B290-5	1/28/08	5	6	Area 2	UG/KG	<1.1
B290	B290-10	1/28/08	10	11	Area 2	UG/KG	<1.5
B291	B291-10	1/29/08	10	11	Area 2	UG/KG	<1.6
B292	B292-5	1/22/09	5	6	Area 2	UG/KG	16
B292	B292-10	1/22/09	10	11	Area 2	UG/KG	<61
B293	B293-5	1/22/09	5	6	Area 2	UG/KG	1.5
B293	B293-10	1/22/09	10	11	Area 2	UG/KG	<1.1
B294	B294-05	1/31/08	4.5	5	Area 2	UG/KG	<78
B294	B294-10	1/31/08	10	11	Area 2	UG/KG	12
B295	B295-5	1/22/09	5	6	Area 2	UG/KG	<0.96
B295	B295-10	1/22/09	10	11	Area 2	UG/KG	2

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B297	B297-5	1/20/09	4.5	5.5	Area 2	UG/KG	2.8
B297	B297-10	1/20/09	9.5	10.5	Area 2	UG/KG	<1.1
B298	B298-5	1/28/08	5	6	Area 2	UG/KG	<1.6
B298	B298-10	1/28/08	10	11	Area 2	UG/KG	6.4
B299	B299-5	1/19/09	5	6	Area 4	UG/KG	1800
B299	B299-10	1/19/09	9.5	10.5	Area 4	UG/KG	9300
B300	B300-05	2/6/08	5	6	Area 4	UG/KG	<0.99
B300	B300-10	2/6/08	10	11	Area 4	UG/KG	<1.1
B301	B301-05	2/6/08	5	6	Area 4	UG/KG	<1.1
B301	B301-10	2/6/08	10	11	Area 4	UG/KG	<1
B302	B302-05	2/5/08	5	6	Area 4	UG/KG	<1.4
B302	B302-10	2/5/08	10	11	Area 4	UG/KG	<0.99
B303	B303-05	1/28/08	5	6	Area 4	UG/KG	1200
B303	B303-10	1/28/08	10	11	Area 4	UG/KG	780
B304	B304-5	1/19/09	4.5	5.5	Area 3	UG/KG	1.7
B304	B304-10	1/19/09	9.5	10.5	Area 3	UG/KG	1
B305	B305-5	1/19/09	4.5	5.5	Area 3	UG/KG	2.5
B305	B305-10	1/19/09	9.5	10.5	Area 3	UG/KG	19
B306	B306-05	1/31/08	5	6	Area 3	UG/KG	90
B306	B306-10	1/31/08	10	11	Area 3	UG/KG	29
B307	B307-5	1/28/08	5	6	Area 3	UG/KG	28
B307	B307-10	1/28/08	10	11	Area 3	UG/KG	23
B308	B308-05	1/30/08	5	6	Area 3	UG/KG	3
B308	B308-10	1/30/08	10	11	Area 3	UG/KG	6.6
B309	B309-5	1/19/09	4.5	5.5	Area 3	UG/KG	<0.86
B309	B309-10	1/19/09	9.5	10.5	Area 3	UG/KG	3.7
B310	B310-05	2/4/08	5	6	Area 3	UG/KG	140
B310	B310-10	2/4/08	10	11	Area 3	UG/KG	120
B311	B311-05	2/5/08	5	6	Area 3	UG/KG	<54
B311	B311-10	2/5/08	10	11	Area 3	UG/KG	<1.4
B312	B312-05	1/30/08	4.5	5.5	Area 3	UG/KG	<1.5
B312	B312-10	1/30/08	10	11	Area 3	UG/KG	<1.4
B313	B313-05	2/1/08	4.5	5.5	Area 3	UG/KG	<1.6
B313	B313-10	2/1/08	10	11	Area 3	UG/KG	<1.4
B314	B314-05	1/30/08	5	6	Area 2	UG/KG	190
B314	B314-10	1/30/08	10	11	Area 2	UG/KG	98
B315	B315-05	1/30/08	4.5	5.5	Area 3	UG/KG	880
B315	B315-10	1/30/08	10	11	Area 3	UG/KG	5900
B316	B316-05	1/30/08	4.5	5.5	Area 3	UG/KG	<1.2
B316	B316-10	1/30/08	10	11	Area 3	UG/KG	<100
B317	B317-05	1/29/08	4.5	5.5	Area 3	UG/KG	<1.7
B317	B317-10	1/29/08	10	11	Area 3	UG/KG	<1.1
B318	B318-05	1/28/08	4.5	5.5	Area 2	UG/KG	<0.63
B318	B318-10	1/28/08	10	11	Area 2	UG/KG	2.3
B319	B319-5	1/21/09	5	6	Area 2	UG/KG	1.1
B319	B319-10	1/21/09	10	11	Area 2	UG/KG	<0.97
B320	B320-05	1/29/08	4.5	5.5	Area 3	UG/KG	<1.4
B320	B320-10	1/29/08	10	11	Area 3	UG/KG	<0.95
B321	B321-05	1/30/08	4.5	5.5	Area 3	UG/KG	<2
B321	B321-10	1/30/08	10	11	Area 3	UG/KG	<1.2
B322	B322-05	2/1/08	5	6	Area 3	UG/KG	<1.3
B322	B322-10	2/1/08	10	11	Area 3	UG/KG	<1.1
B323	B323-05	1/28/08	4.5	5.5	Area 3	UG/KG	<1

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B323	B323-10	1/28/08	10	11	Area 3	UG/KG	<1.1
B324	B324-00	4/8/08	0	0.5	Area 4	UG/KG	<1
B324	B324-02	4/8/08	1.5	2	Area 4	UG/KG	<1.3
B325	B325-00	4/8/08	0	0.5	Area 4	UG/KG	<1.2
B325	B325-02	4/8/08	1.5	2	Area 4	UG/KG	<1.1
B326	B326-00	4/8/08	0	0.5	Area 4	UG/KG	<1.2
B326	B326-02	4/8/08	1.5	2	Area 4	UG/KG	<1.3
B-401	LL_B-401-1_100611	10/6/11	0.5	1	Area 2	UG/KG	300
B-401	LL_B-401-3_100611	10/6/11	2.5	3	Area 2	UG/KG	5.6
B-401	LL_B-401-6_100611	10/6/11	5.5	6	Area 2	UG/KG	<5.0
B-401	LL_B-401-9_100611	10/6/11	8.5	9	Area 2	UG/KG	<5.0
B-402	LL_B-402-1_100611	10/6/11	0.5	1	Area 2	UG/KG	<5.0
B-402	LL_B-402-3_100611	10/6/11	2.5	3	Area 2	UG/KG	<5.0
B-402	LL_B-402-6_100611	10/6/11	5.5	6	Area 2	UG/KG	<5.0
B-402	LL_B-402-9_100611	10/6/11	8.5	9	Area 2	UG/KG	<5.0
B-403	LL_B-403-1_100711	10/7/11	0.5	1	Area 2	UG/KG	18
B-403	LL_B-403-3_100711	10/7/11	2.5	3	Area 2	UG/KG	75
B-403	LL_B-403-6_100711	10/7/11	5.5	6	Area 2	UG/KG	<5.0
B-403	LL_B-403-9_100711	10/7/11	8.5	9	Area 2	UG/KG	<5.0
B-404	LL_B-404-1_100711	10/7/11	0.5	1	Area 2	UG/KG	70
B-404	LL_B-404-3_100711	10/7/11	2.5	3	Area 2	UG/KG	360
B-404	LL_B-404-6_100711	10/7/11	5.5	6	Area 2	UG/KG	14
B-404	LL_B-404-9_100711	10/7/11	8.5	9	Area 2	UG/KG	5.1
B-405	LL_B-405-1_100711	10/7/11	0.5	1	Area 2	UG/KG	30
B-405	LL_B-405-3_100711	10/7/11	2.5	3	Area 2	UG/KG	4400
B-406	LL_B-406-1_100711	10/7/11	0.5	1	Area 2	UG/KG	<5.0
B-406	LL_B-406-3_100711	10/7/11	2.5	3	Area 2	UG/KG	<5.0
B-406	LL_B-406-6_100711	10/7/11	5.5	6	Area 2	UG/KG	<5.0
B-406	LL_B-406-9_100711	10/7/11	8.5	9	Area 2	UG/KG	<5.0
B-407	LL_B-407-1_100711	10/7/11	0.5	1	Area 2	UG/KG	50
B-407	LL_B-407-3_100711	10/7/11	2.5	3	Area 2	UG/KG	170
B-407	LL_B-407-6_100711	10/7/11	5.5	6	Area 2	UG/KG	38
B-407	LL_B-407-9_100711	10/7/11	8.5	9	Area 2	UG/KG	130
B-408	LL_B-408-1_100711	10/7/11	0.5	1	Area 2	UG/KG	43
B-408	LL_B-408-3_100711	10/7/11	2.5	3	Area 2	UG/KG	7.7
B-408	LL_B-408-6_100711	10/7/11	5.5	6	Area 2	UG/KG	<5.0
B-408	LL_B-408-9_100711	10/7/11	8.5	9	Area 2	UG/KG	<5.0
B-409	LL_B-409-1_100711	10/7/11	0.5	1	Area 2	UG/KG	190
B-409	LL_B-409-3_100711	10/7/11	2.5	3	Area 2	UG/KG	140
B-409	LL_B-409-6_100711	10/7/11	5.5	6	Area 2	UG/KG	17
B-409	LL_B-409-9_100711	10/7/11	8.5	9	Area 2	UG/KG	86
B-410	LL_B-410-1_100711	10/7/11	0.5	1	Area 2	UG/KG	64
B-410	LL_B-410-3_100711	10/7/11	2.5	3	Area 2	UG/KG	70
B-410	LL_B-410-6_100711	10/7/11	5.5	6	Area 2	UG/KG	<5.0
B-410	LL_B-410-9_100711	10/7/11	8.5	9	Area 2	UG/KG	99
B-411	LL_B-411-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<5.0
B-411	LL_B-411-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<5.0
B-411	LL_B-411-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<5.0
B-411	LL_B-411-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<5.0
B-412	LL_B-412-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<5.0
B-412	LL_B-412-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<5.0
B-412	LL_B-412-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<5.0
B-412	LL_B-412-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<5.0

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B-413	LL_B-413-1_100611	10/6/11	0.5	1	Area 1	UG/KG	5.1
B-413	LL_B-413-3_100611	10/6/11	2.5	3	Area 1	UG/KG	9.1
B-413	LL_B-413-6_100611	10/6/11	5.5	6	Area 1	UG/KG	21
B-413	LL_B-413-9_100611	10/6/11	8.5	9	Area 1	UG/KG	7.2
B-414	LL_B-414-1_100611	10/6/11	0.5	1	Area 1	UG/KG	6.6
B-414	LL_B-414-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<5.0
B-414	LL_B-414-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<5.0
B-414	LL_B-414-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<5.0
B-415	LL_B-415-1_100611	10/6/11	0.5	1	Area 1	UG/KG	61
B-415	LL_B-415-3_100611	10/6/11	2.5	3	Area 1	UG/KG	56
B-415	LL_B-415-6_100611	10/6/11	5.5	6	Area 1	UG/KG	110
B-415	LL_B-415-9_100611	10/6/11	8.5	9	Area 1	UG/KG	88
B-416	LL_B-416-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<5.0
B-416	LL_B-416-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<5.0
B-416	LL_B-416-6_100611	10/6/11	5.5	6	Area 1	UG/KG	8.0
B-416	LL_B-416-9_100611	10/6/11	8.5	9	Area 1	UG/KG	160
B-417	LL_B-417-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<5.0
B-417	LL_B-417-3_100611	10/6/11	2.5	3	Area 1	UG/KG	32
B-417	LL_B-417-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<5.0
B-417	LL_B-417-9_100611	10/6/11	8.5	9	Area 1	UG/KG	51
B-418	LL_B-418-1_100611	10/6/11	0.5	1	Area 1	UG/KG	5.0
B-418	LL_B-418-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<5.0
B-418	LL_B-418-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<5.0
B-418	LL_B-418-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<5.0
B-419	LL_B-419-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<5.0
B-419	LL_B-419-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<5.0
B-419	LL_B-419-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<5.0
B-419	LL_B-419-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<5.0
B-420	LL_B-420-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<5.0
B-420	LL_B-420-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<5.0
B-420	LL_B-420-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<5.0
B-420	LL_B-420-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<5.0
B-421	LL_B-421-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<5.0
B-421	LL_B-421-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<5.0
B-421	LL_B-421-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<5.0
B-421	LL_B-421-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<5.0
B-422	LL_B-422-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<5.0
B-422	LL_B-422-3_100511	10/5/11	2.5	3	Area 3	UG/KG	70
B-422	LL_B-422-6_100611	10/6/11	5.5	6	Area 3	UG/KG	270
B-422	LL_B-422-9_100611	10/6/11	8.5	9	Area 3	UG/KG	150
B-423	LL_B-423-1_100711	10/7/11	0.5	1	Area 3	UG/KG	11
B-423	LL_B-423-3_100711	10/7/11	2.5	3	Area 3	UG/KG	96
B-423	LL_B-423-6_100711	10/7/11	5.5	6	Area 3	UG/KG	46
B-423	LL_B-423-9_100711	10/7/11	8.5	9	Area 3	UG/KG	6.6
B-424	LL_B-424-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<5.0
B-424	LL_B-424-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<5.0
B-424	LL_B-424-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<5.0
B-424	LL_B-424-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<5.0
B-425	LL_B-425-1_100511	10/5/11	0.5	1	Area 3	UG/KG	7.2
B-425	LL_B-425-3_100511	10/5/11	2.5	3	Area 3	UG/KG	54
B-425	LL_B-425-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<5.0
B-425	LL_B-425-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<5.0
B-426	LL_B-426-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<5.0

Table B3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
B-426	LL_B-426-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<5.0
B-426	LL_B-426-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<5.0
B-426	LL_B-426-9_100511	10/5/11	8.5	9	Area 3	UG/KG	27
B-427	LL_B-427-1_100511	10/5/11	0.5	1	Area 3	UG/KG	380
B-427	LL_B-427-3_100511	10/5/11	2.5	3	Area 3	UG/KG	130
B-427	LL_B-427-6_100511	10/5/11	5.5	6	Area 3	UG/KG	31
B-427	LL_B-427-9_100511	10/5/11	8.5	9	Area 3	UG/KG	120
B-428	LL_B-428-1_100511	10/5/11	0.5	1	Area 3	UG/KG	88
B-428	LL_B-428-3_100511	10/5/11	2.5	3	Area 3	UG/KG	460
B-428	LL_B-428-6_100511	10/5/11	5.5	6	Area 3	UG/KG	370
B-428	LL_B-428-9_100511	10/5/11	8.5	9	Area 3	UG/KG	80
B-429	LL_B-429-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<5.0
B-429	LL_B-429-3_100511	10/5/11	2.5	3	Area 3	UG/KG	41
B-429	LL_B-429-6_100511	10/5/11	5.5	6	Area 3	UG/KG	8.4
B-429	LL_B-429-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<5.0
B-430	LL_B-430-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<5.0
B-430	LL_B-430-3_100511	10/5/11	2.5	3	Area 3	UG/KG	5.4
B-430	LL_B-430-6_100511	10/5/11	5.5	6	Area 3	UG/KG	12
B-430	LL_B-430-9_100511	10/5/11	8.5	9	Area 3	UG/KG	7.7
S001	S001-0"	12/4/07	0	0.5	Area 4	UG/KG	<0.51
S002	S002-0"	12/4/07	0	0.5	Area 4	UG/KG	<0.49
S003ALT	S003ALT-0"	12/20/07	0	0.5	Area 4	UG/KG	<0.92
S004	S004-0"	1/4/08	0	0.5	Area 4	UG/KG	1
S004	S004-12"	1/4/08	1	1.5	Area 4	UG/KG	1.1
S005	S005-0"	12/18/07	0	0.5	Area 4	UG/KG	<1.2
S006	S006-0"	12/17/07	0	0.5	Area 4	UG/KG	<1.2
S006	S006-12"	12/17/07	1	1.5	Area 4	UG/KG	<1
S007	S007-0"	12/17/07	0	0.5	Area 4	UG/KG	<1.1
S008	S008-0"	12/17/07	0	0.5	Area 4	UG/KG	<1.1
S009	S009-0"	12/17/07	0	0.5	Area 4	UG/KG	<0.95
S009	S009-12"	12/17/07	1	1.5	Area 4	UG/KG	3.6
S010	S010-6''	1/19/09	0.5	1	Area 4	UG/KG	<1.6
S011	S011-0"	12/17/07	0	0.5	Area 4	UG/KG	810
S011	S011-12"	12/17/07	1	1.5	Area 4	UG/KG	1900
S012	S012B-0"	12/18/07	0	0.5	Area 4	UG/KG	<1.1
S013	S013-0"	1/4/08	0	0.5	Area 4	UG/KG	<0.92
S014	S014-0"	12/4/07	0	0.5	Area 4	UG/KG	<1.1
S015	S015-0"	12/4/07	0	0.5	Area 4	UG/KG	<0.73
S016	S016B-0"	1/2/08	0	0.5	Area 4	UG/KG	4.1
S016	S016B-12"	1/2/08	1	1.5	Area 4	UG/KG	<0.81
S017	S017-0"	12/4/07	0	0.5	Area 4	UG/KG	<1.3
S018	S018-0"	12/20/07	0	0.5	Area 4	UG/KG	21
S019	S019-0"	12/18/07	0	0.5	Area 4	UG/KG	<1
S020	S020-0"	12/18/07	0	0.5	Area 4	UG/KG	3500
S020	S020-12"	12/18/07	1	1.5	Area 4	UG/KG	4700
S021	S021-6''	1/19/09	0.5	1	Area 4	UG/KG	<1.3
S022	S022-0"	12/17/07	0	0.5	Area 4	UG/KG	<0.85
S023	S023-0"	12/17/07	0	0.5	Area 3	UG/KG	<1
S024	S024-0"	12/17/07	0	0.5	Area 3	UG/KG	<1.2
S025	S025-0"	12/18/07	0	0.5	Area 3	UG/KG	190
S025	S025-12"	12/18/07	1	1.5	Area 3	UG/KG	72
S026	S026-0"	12/18/07	0	0.5	Area 3	UG/KG	<250
S026	S026-12"	12/18/07	1	1.5	Area 3	UG/KG	<170

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
S027	S027-0"	12/20/07	0	0.5	Area 3	UG/KG	740
S028	S028-0"	12/4/07	0	0.5	Area 3	UG/KG	<1.1
S029	S029-0"	12/4/07	0	0.5	Area 3	UG/KG	<56
S029	S029-18"	12/4/07	1.5	2	Area 3	UG/KG	<46
S030	S030-12"	12/4/07	1	1.5	Area 3	UG/KG	230
S031	S031-0"	12/4/07	0	0.5	Area 3	UG/KG	<1.2
S032	S032-0"	12/4/07	0	0.5	Area 3	UG/KG	<0.51
S033	S033-0"	12/4/07	0	0.5	Area 3	UG/KG	<0.63
S034	S034-0"	12/4/07	0	0.5	Area 3	UG/KG	<1
S035	S035-0"	12/4/07	0	0.5	Area 3	UG/KG	<51
S036	S036-0"	12/4/07	0	0.5	Area 3	UG/KG	<1.1
S037	S037-0"	12/4/07	0	0.5	Area 3	UG/KG	700
S037	S037-20"	12/4/07	1.67	2.167	Area 3	UG/KG	2600
S038	S038-0"	12/20/07	0	0.5	Area 3	UG/KG	<0.83
S039	S039-0"	1/2/08	0	0.5	Area 3	UG/KG	22
S039	S039-12"	1/2/08	1	1.5	Area 3	UG/KG	420
S040	S040-0"	12/20/07	0	0.5	Area 3	UG/KG	19
S040	S040-12"	12/20/07	1	1.5	Area 3	UG/KG	35
S041	S041-0"	1/30/08	0	0.5	Area 3	UG/KG	<56
S042	S042-0"	1/30/08	0	0.5	Area 3	UG/KG	140
S042	S042-12"	1/30/08	1	1.5	Area 3	UG/KG	320
S043	S043-0"	1/30/08	0	0.5	Area 3	UG/KG	<48
S044	S044-0"	12/20/07	0	0.5	Area 3	UG/KG	<100
S045	S045-0"	12/20/07	0	0.5	Area 3	UG/KG	50
S046	S046-0"	12/20/07	0	0.5	Area 3	UG/KG	28
S047	S047-6"	1/20/09	0.5	1	Area 3	UG/KG	81
S048	S048-0"	1/7/08	0	0.5	Area 3	UG/KG	570
S049	S049-6"	1/20/09	0.5	1	Area 3	UG/KG	<1.1
S050	S050-0"	12/4/07	0	0.5	Area 3	UG/KG	<24
S051	S051-0"	12/20/07	0	0.5	Area 3	UG/KG	28
S052	S052-0"	12/20/07	0	0.5	Area 3	UG/KG	280
S052	S052-12"	12/20/07	1	1.5	Area 3	UG/KG	1000
S053	S053-0"	12/20/07	0	0.5	Area 3	UG/KG	750
S053	S053-12"	12/20/07	1	1.5	Area 3	UG/KG	140
S054	S054-0"	1/30/08	0	0.5	Area 3	UG/KG	200
S055	S055-0"	1/30/08	0	0.5	Area 3	UG/KG	<55
S055	S055-12"	1/30/08	1	1.5	Area 3	UG/KG	1.5
S056	S056-0"	1/30/08	0	0.5	Area 3	UG/KG	<5.6
S056	S056-12"	1/30/08	1	1.5	Area 3	UG/KG	<66
S057	S057-0"	1/30/08	0	0.5	Area 3	UG/KG	3.1
S058	S058-0"	2/1/08	0	0.5	Area 3	UG/KG	<0.94
S059	S059-0"	2/1/08	0	0.5	Area 3	UG/KG	1.3
S059	S059-12"	2/1/08	1	1.5	Area 3	UG/KG	1.6
S060	S060-0"	12/13/07	0	0.5	Area 3	UG/KG	<0.81
S060	S060-18"	12/13/07	1.5	2	Area 3	UG/KG	5.8
S061	S061-0"	12/13/07	0	0.5	Area 3	UG/KG	<1.1
S063	S063-0"	12/14/07	0	0.5	Area 3	UG/KG	3.1
S064	S064-0"	12/14/07	0	0.5	Area 3	UG/KG	<1.1
S064	S064-18"	12/14/07	1.5	2	Area 3	UG/KG	8.6
S065	S065-0"	2/1/08	0	0.5	Area 3	UG/KG	<1.2
S065	S065-12"	2/1/08	1	1.5	Area 3	UG/KG	<1
S066	S066-0"	12/14/07	0	0.5	Area 3	UG/KG	0.96
S067	S067-0"	12/14/07	0	0.5	Area 3	UG/KG	<1.1

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
S068	S068-0"	12/13/07	0	0.5	Area 3	UG/KG	<1.2
S069	S069-0"	12/13/07	0	0.5	Area 3	UG/KG	<0.92
S070	S070-0"	12/13/07	0	0.5	Area 3	UG/KG	<1.2
S071B	S071B-12"	12/21/07	1	1.5	Area 3	UG/KG	<0.97
S072	S072-0"	12/4/07	0	0.5	Area 3	UG/KG	<0.72
S073	S073-0"	12/4/07	0	0.5	Area 3	UG/KG	<0.59
S074	S074-0"	12/4/07	0	0.5	Area 3	UG/KG	<25
S075	S075-0"	12/4/07	0	0.5	Area 3	UG/KG	<0.53
S076	S076-6''	1/22/09	0.5	1	Area 3	UG/KG	3.7
S078	S078-0"	2/1/08	0	0.5	Area 3	UG/KG	<45
S078	S078-12"	2/1/08	1	1.5	Area 3	UG/KG	<35
S079	S079-0"	2/1/08	0	0.5	Area 3	UG/KG	<77
S080	S080-0"	2/1/08	0	0.5	Area 3	UG/KG	19
S081	S081-0"	2/1/08	0	0.5	Area 3	UG/KG	1.2
S082	S082-0"	12/13/07	0	0.5	Area 3	UG/KG	<1.1
S083	S083-0"	12/13/07	0	0.5	Area 3	UG/KG	<44
S083	S083-15"	12/13/07	1.25	1.75	Area 3	UG/KG	2.1
S084	S084-0"	12/4/07	0	0.5	Area 3	UG/KG	<1.1
S085	S085-0"	12/4/07	0	0.5	Area 3	UG/KG	<1.2
S086	S086-6"	1/20/09	0.5	1	Area 3	UG/KG	17
S087	S087-0"	12/13/07	0	0.5	Area 3	UG/KG	<1.4
S088	S088-0"	1/2/08	0	0.5	Area 3	UG/KG	1.8
S089	S089-0"	1/2/08	0	0.5	Area 3	UG/KG	<1
S090	S090-0"	12/13/07	0	0.5	Area 3	UG/KG	<52
S090	S090-18"	12/13/07	1.5	2	Area 3	UG/KG	<44
S091	S091-0"	2/1/08	0	0.5	Area 3	UG/KG	<53
S092	S092-0"	12/13/07	0	0.5	Area 3	UG/KG	<1.3
S093	S093-0"	12/4/07	0	0.5	Area 3	UG/KG	<0.81
S094	S094-0"	12/4/07	0	0.5	Area 3	UG/KG	<0.6
S095	S095-0"	12/4/07	0	0.5	Area 3	UG/KG	<1.1
S096	S096-0"	12/4/07	0	0.5	Area 3	UG/KG	<0.9
S097	S097-6"	1/20/09	0.5	1	Area 3	UG/KG	<1.1
S098	S098-0"	12/4/07	0	0.5	Area 3	UG/KG	<1.7
S099	S099-0"	12/13/07	0	0.5	Area 3	UG/KG	<0.89
S100	S100-0"	12/13/07	0	0.5	Area 3	UG/KG	<1.1
S101	S101-0"	12/13/07	0	0.5	Area 3	UG/KG	<1
S102	S102-0"	12/13/07	0	0.5	Area 3	UG/KG	<1
S102	S102-15"	12/13/07	1.25	1.75	Area 3	UG/KG	<1
S103	S103-0"	1/3/08	0	0.5	Area 2	UG/KG	<0.87
S103	S103-12"	1/3/08	1	1.5	Area 2	UG/KG	<1.1
S104	S104-0"	1/29/08	0	0.5	Area 2	UG/KG	<0.99
S105	S105-0"	1/31/08	0	0.5	Area 2	UG/KG	4.7
S106	S106-6''	1/22/09	0.5	1	Area 2	UG/KG	<1.2
S106	S106-12''	1/22/09	1	1.5	Area 2	UG/KG	<1.2
S107	S107-0"	12/20/07	0	0.5	Area 2	UG/KG	<0.95
S108	S108-0"	12/20/07	0	0.5	Area 2	UG/KG	6.7
S109	S109-0"	1/31/08	0	0.5	Area 2	UG/KG	980
S109	S109-12"	1/31/08	1	1.5	Area 2	UG/KG	1200
S110	S110-6''	1/22/09	0.5	1	Area 2	UG/KG	<1.8
S111	S111-0"	12/21/07	0	0.5	Area 2	UG/KG	<2400
S111	S111-12"	12/21/07	1	1.5	Area 2	UG/KG	<940
S112	S112-6''	1/22/09	0.5	1	Area 2	UG/KG	73
S113	S113-0"	1/31/08	0	0.5	Area 2	UG/KG	12000

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
S113	S113-12"	1/31/08	1	1.5	Area 2	UG/KG	100000
S114	S114-0"	1/29/08	0	0.5	Area 2	UG/KG	<0.86
S115	S115-0"	1/29/08	0	0.5	Area 2	UG/KG	<51
S116	S116-0"	1/29/08	0	0.5	Area 2	UG/KG	<1
S117	S117-0"	1/31/08	0	0.5	Area 2	UG/KG	<1
S117	S117-12"	2/1/08	1	1.5	Area 2	UG/KG	<1.1
S118	S118-6''	1/22/09	0.5	1	Area 2	UG/KG	<1.3
S119	S119-0"	1/4/08	0	0.5	Area 2	UG/KG	300
S119	S119-12"	1/4/08	1	1.5	Area 2	UG/KG	960
S120	S120-0"	1/4/08	0	0.5	Area 2	UG/KG	160
S121	S121-0"	1/4/08	0	0.5	Area 2	UG/KG	<44
S121	S121-12"	1/4/08	1	1.5	Area 2	UG/KG	<610
S122	S122-0"	1/29/08	0	0.5	Area 1	UG/KG	<1.1
S123	S123-0"	11/29/07	0	0.5	Area 1	UG/KG	<0.88
S124	S124-0"	11/29/07	0	0.5	Area 1	UG/KG	<0.56
S125	S125-0"	1/29/08	0	0.5	Area 1	UG/KG	<1.1
S126	S126-0"	1/7/08	0	0.5	Area 1	UG/KG	<0.8
S126	S126-12"	1/7/08	1	1.5	Area 1	UG/KG	<0.94
S127	S127-0"	2/1/08	0	0.5	Area 3	UG/KG	<1.1
S130	S130-0"	1/7/08	0	0.5	Area 3	UG/KG	100
S130	S130-12"	1/7/08	1	1.5	Area 3	UG/KG	<54
S131	S131-0"	1/7/08	0	0.5	Area 1	UG/KG	<46
S132	S132-0"	1/3/08	0	0.5	Area 1	UG/KG	1.3
S133	S133B-0"	11/29/07	0	0.5	Area 1	UG/KG	<0.65
S133	S133B-12"	11/29/07	1	1.5	Area 1	UG/KG	<0.74
S134	S134-0"	1/7/08	0	0.5	Area 1	UG/KG	1.1
S135	S135-6''	1/19/09	0.5	1	Area 1	UG/KG	<1.2
S136	S136-0"	11/29/07	0	0.5	Area 1	UG/KG	64
S136	S136-24"	11/29/07	2	2.5	Area 1	UG/KG	14
S137	S137-0"	11/29/07	0	0.5	Area 1	UG/KG	<0.54
S138	S138-0"	11/29/07	0	0.5	Area 1	UG/KG	<34
S138	S138-18"	11/29/07	1.5	2	Area 1	UG/KG	140
S139	S139-12"	11/29/07	1	1.5	Area 1	UG/KG	18
S139	S139-24"	11/29/07	2	2.5	Area 1	UG/KG	61
S140	S140-12"	11/29/07	1	1.5	Area 1	UG/KG	0.61
S141	S141-0"	1/7/08	0	0.5	Area 3	UG/KG	<34
S141	S141-12"	1/7/08	1	1.5	Area 3	UG/KG	0.71
S142	S142-0"	1/7/08	0	0.5	Area 3	UG/KG	1.1
S143	S143-0"	1/7/08	0	0.5	Area 3	UG/KG	1.1
S144B	S144B-0"	1/31/08	0	0.5	Area 3	UG/KG	<1.3
S144B	S144B-12"	1/31/08	1	1.5	Area 3	UG/KG	<0.9
S145	S145-0"	1/7/08	0	0.5	Area 3	UG/KG	1.7
S145	S145-12"	1/7/08	1	1.5	Area 3	UG/KG	2.4
S146	S146-0"	11/29/07	0	0.5	Area 1	UG/KG	<0.76
S147	S147-12"	11/29/07	1	1.5	Area 1	UG/KG	<0.93
S148	S148-0"	11/29/07	0	0.5	Area 1	UG/KG	3.9
S149	S149-12"	11/29/07	1	1.5	Area 1	UG/KG	<0.62
S150	S150-12"	11/29/07	1	1.5	Area 1	UG/KG	280
S151	S151-12"	11/29/07	1	1.5	Area 1	UG/KG	<0.56
S152	S152-0"	11/29/07	0	0.5	Area 1	UG/KG	<0.81
S153	S153-0"	11/29/07	0	0.5	Area 1	UG/KG	0.92
S154	S154-0"	11/29/07	0	0.5	Area 1	UG/KG	2.6
S155	S155B-0"	11/29/07	0	0.5	Area 1	UG/KG	<0.65

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
S156	S156-0"	1/7/08	0	0.5	Area 3	UG/KG	2.9
S157	S157-0"	1/2/08	0	0.5	Area 3	UG/KG	<0.76
S158	S158-0"	12/17/07	0	0.5	Area 3	UG/KG	<0.98
S158	S158-12"	12/17/07	1	1.5	Area 3	UG/KG	<61
S159	S159-0"	12/17/07	0	0.5	Area 3	UG/KG	<1
S160	S160-0"	1/7/08	0	0.5	Area 3	UG/KG	<0.92
S161	S161B-0"	11/29/07	0	0.5	Area 1	UG/KG	<0.77
S162	S162-12"	11/29/07	1	1.5	Area 1	UG/KG	2
S162	S162-24"	11/29/07	2	2.5	Area 1	UG/KG	1.1
S163	S163-0"	11/29/07	0	0.5	Area 1	UG/KG	<0.83
S164	S164-0"	11/29/07	0	0.5	Area 1	UG/KG	1.5
S165	S165-0"	11/29/07	0	0.5	Area 1	UG/KG	<0.56
S166	S166-0"	11/29/07	0	0.5	Area 1	UG/KG	6.9
S167	S167-0"	11/29/07	0	0.5	Area 1	UG/KG	7
S168	S168-0"	11/29/07	0	0.5	Area 1	UG/KG	2.6
S169	S169-0"	11/29/07	0	0.5	Area 1	UG/KG	<0.83
S170	S170-0"	1/7/08	0	0.5	Area 3	UG/KG	0.73
S171	S171-0"	12/17/07	0	0.5	Area 3	UG/KG	<1.3
S171	S171-12"	12/17/07	1	1.5	Area 3	UG/KG	<4.5
S172	S172-0"	12/17/07	0	0.5	Area 3	UG/KG	8
S173	S173-0"	12/17/07	0	0.5	Area 3	UG/KG	<0.83
S174	S174-0"	12/14/07	0	0.5	Area 3	UG/KG	<5.7
S175	S175-0"	1/31/08	0	0.5	Area 3	UG/KG	4.4
S175	S175-0"	1/7/08	0	0.5	Area 3	UG/KG	4300
S176	S176-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.79
S177	S177-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.9
S178	S178-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.53
S179	S179-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.98
S180	S180-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.99
S181	S181-0"	1/31/08	0	0.5	Area 3	UG/KG	<1
S182	S182-0"	12/14/07	0	0.5	Area 3	UG/KG	<1.1
S183	S183-0"	12/17/07	0	0.5	Area 3	UG/KG	<1.2
S184	S184-0"	12/14/07	0	0.5	Area 3	UG/KG	38
S185	S185-6''	1/19/09	0.5	1	Area 3	UG/KG	<1.1
S186	S186-0"	1/31/08	0	0.5	Area 3	UG/KG	<1
S187	S187-0"	1/4/08	0	0.5	Area 1	UG/KG	<0.71
S188	S188-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.44
S189	S189-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.92
S190	S190-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.91
S191	S191-0"	11/26/07	0	0.5	Area 1	UG/KG	0.64
S192	S192-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.94
S193	S193-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.89
S194	S194-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.98
S195	S195-0"	11/26/07	0	0.5	Area 1	UG/KG	<1.2
S196	S196-0"	11/26/07	0	0.5	Area 1	UG/KG	4.4
S196	S196-18"	11/26/07	1.5	2	Area 1	UG/KG	<560
S197	S197-0"	11/26/07	0	0.5	Area 1	UG/KG	<1
S198	S198-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.63
S199	S199-12"	11/26/07	1	1.5	Area 1	UG/KG	<28
S199	S199-24"	11/26/07	2	2.5	Area 1	UG/KG	<0.6
S200	S200-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.54
S201	S201-0"	11/26/07	0	0.5	Area 1	UG/KG	2.5
S201	S201-18"	11/26/07	1.5	2	Area 1	UG/KG	<1.3

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
S202	S202-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.69
S203	S203-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.81
S204	S204-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.59
S205	S205-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.9
S206	S206-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.95
S207	S207-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.45
S208	S208-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.72
S209	S209-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.46
S210	S210-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.48
S211	S211-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.44
S212	S212-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.93
S213	S213-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.91
S214	S214-0"	11/28/07	0	0.5	Area 1	UG/KG	0.7
S215	S215-0"	11/28/07	0	0.5	Area 1	UG/KG	<170
S216	S216-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.75
S217	S217-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.68
S218	S218-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.74
S219	S219-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.46
S220	S220-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.86
S221	S221-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.75
S222	S222-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.94
S223	S223-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.59
S224	S224-0"	11/28/07	0	0.5	Area 1	UG/KG	<74
S225	S225-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.47
S226	S226-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.49
S227	S227-0"	11/29/07	0	0.5	Area 1	UG/KG	<0.62
S228	S228-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.74
S229	S229-0"	11/28/07	0	0.5	Area 1	UG/KG	1.6
S230	S230-0"	11/28/07	0	0.5	Area 1	UG/KG	<1.1
S230	S230-12"	11/28/07	1	1.5	Area 1	UG/KG	<0.95
S231	S231-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.67
S232	S232-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.64
S233	S233-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.98
S234	S234-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.68
S235	S235-0"	11/28/07	0	0.5	Area 1	UG/KG	<1.1
S236	S236-0"	11/28/07	0	0.5	Area 1	UG/KG	1.3
S237	S237-0"	11/29/07	0	0.5	Area 1	UG/KG	<1
S238	S238-0"	1/28/08	0	0.5	Area 2	UG/KG	<0.9
S239	S239-0"	1/28/08	0	0.5	Area 2	UG/KG	<1.7
S239	S239-12"	1/30/08	1	1.5	Area 2	UG/KG	<1
S240	S240-6"	1/20/09	0.5	1	Area 2	UG/KG	<1.5
S241	S241-6"	1/20/09	0.5	1	Area 2	UG/KG	<1.3
S242	S242-0"	1/29/08	0	0.5	Area 2	UG/KG	<1.2
S243	S243-0"	1/29/08	0	0.5	Area 2	UG/KG	<1
S244	S244-0"	1/28/08	0	0.5	Area 2	UG/KG	<0.96
S245	S245-0"	1/28/08	0	0.5	Area 2	UG/KG	<1.1
S246	S246-0"	1/29/08	0	0.5	Area 2	UG/KG	2.2
S247	S247-0"	1/29/08	0	0.5	Area 2	UG/KG	<1.2
S248	S248-0"	1/28/08	0	0.5	Area 2	UG/KG	<0.96
S249	S249-0"	1/28/08	0	0.5	Area 2	UG/KG	<0.88
S250	S250-0"	1/28/08	0	0.5	Area 2	UG/KG	<1.1
S250	S250-12"	1/30/08	1	1.5	Area 2	UG/KG	<0.97
S251	S251-0"	1/28/08	0	0.5	Area 2	UG/KG	<1.4

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
S251	S251-6"	1/20/09	0.5	1	Area 2	UG/KG	0.96
S252	S252-0"	1/29/08	0	0.5	Area 2	UG/KG	<1.4
S253	S253-0"	1/29/08	0	0.5	Area 2	UG/KG	<82
S254	S254-0"	1/29/08	0	0.5	Area 2	UG/KG	<1
S254	S254-12"	1/30/08	1	1.5	Area 2	UG/KG	<0.84
S255	S255-0"	1/29/08	0	0.5	Area 2	UG/KG	<1.3
S256	S256-0"	1/31/08	0	0.5	Area 2	UG/KG	2.2
S257	S257-0"	1/3/08	0	0.5	Area 2	UG/KG	<0.94
S258	S258-0"	1/3/08	0	0.5	Area 2	UG/KG	<0.86
S259	S259-0"	1/31/08	0	0.5	Area 2	UG/KG	<1.1
S260	S260-0"	1/3/08	0	0.5	Area 2	UG/KG	<0.88
S261	S261-0"	12/21/07	0	0.5	Area 3	UG/KG	<1.1
S262	S262-0"	12/13/07	0	0.5	Area 3	UG/KG	<1.1
S263	S263-0"	2/1/08	0	0.5	Area 3	UG/KG	<0.58
S264	S264-0"	1/3/08	0	0.5	Area 3	UG/KG	<0.9
S264	S264-12"	1/3/08	1	1.5	Area 3	UG/KG	<1
S265	S265-6"	1/20/09	0.5	1	Area 3	UG/KG	<1.3
S266	S266-0"	12/14/07	0	0.5	Area 3	UG/KG	<0.97
S267	S267-0"	1/4/08	0	0.5	Area 3	UG/KG	320
S268	S268-0"	1/2/08	0	0.5	Area 3	UG/KG	43
S268	S268-12"	1/2/08	1	1.5	Area 3	UG/KG	360
S269	S269-0"	12/4/07	0	0.5	Area 3	UG/KG	0.77
S270	S270-0"	12/17/07	0	0.5	Area 4	UG/KG	<1
S271	S271-0"	1/4/08	0	0.5	Area 1	UG/KG	<0.87
S272	S272-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.45
S273	S273-0"	11/28/07	0	0.5	Area 1	UG/KG	5.8
S274	S274-0"	11/29/07	0	0.5	Area 1	UG/KG	1.2
S274	S274-12"	11/29/07	1	1.5	Area 1	UG/KG	<0.96
S275	S275-0"	11/29/07	0	0.5	Area 3	UG/KG	1.6
S275	S275-12"	11/29/07	1	1.5	Area 3	UG/KG	<27
S276	S276-0"	11/29/07	0	0.5	Area 1	UG/KG	<0.62
S277	S277-0"	1/31/08	0	0.5	Area 2	UG/KG	<1.2
S278	S278-0"	1/31/08	0	0.5	Area 2	UG/KG	6.3
S279	S279-0"	12/20/07	0	0.5	Area 2	UG/KG	<1.1
S279	S279-12"	12/20/07	1	1.5	Area 2	UG/KG	<0.85
S280	S280-0"	1/3/08	0	0.5	Area 2	UG/KG	<0.84
S281	S281-0"	2/1/08	0	0.5	Area 2	UG/KG	1.2
S282	S282-6"	1/20/09	0.5	1	Area 2	UG/KG	<1.2
S282	S282-12"	1/20/09	1	1.5	Area 2	UG/KG	<1.5
S283	S283-0"	1/29/08	0	0.5	Area 2	UG/KG	<0.94
S284	S284-0"	1/29/08	0	0.5	Area 2	UG/KG	<0.94
S284	S284-12"	1/30/08	1	1.5	Area 2	UG/KG	<0.57
S285	S285-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.99
S286	S286-0"	11/26/07	0	0.5	Area 1	UG/KG	<1
S287	S287-0"	11/26/07	0	0.5	Area 1	UG/KG	<1
S287	S287-12"	11/26/07	1	1.5	Area 1	UG/KG	<1.1
S288	S288-0"	11/26/07	0	0.5	Area 1	UG/KG	2
S289	S289-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.42
S290	S290-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.46
S291	S291-0"	1/7/08	0	0.5	Area 4	UG/KG	<1.1
S292	S292-6"	1/19/09	0.5	1	Area 1	UG/KG	<120
S293	S293-0"	11/26/07	0	0.5	Area 1	UG/KG	<27
S293	S293-24"	11/26/07	2	2.5	Area 1	UG/KG	<0.48

Table A3
Results of Benzene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Benzene
S294	S294-0"	11/26/07	0	0.5	Area 1	UG/KG	<0.61
S295	S295-6"	11/26/07	0.5	1	Area 1	UG/KG	1.2
S296	S296-0"	11/28/07	0	0.5	Area 1	UG/KG	<0.45
S296	S296-18"	11/28/07	1.5	2	Area 1	UG/KG	<0.66
S297	S297-6"	1/20/09	0.5	1	Area 3	UG/KG	<1.2
S297	S297-12"	1/20/09	1	1.5	Area 3	UG/KG	<1.4
S298	S298-0	12/4/07	0	0.5	Area 4	UG/KG	<27
VE1	LL_VE1_10_052611_01	5/26/11	9.5	10	Area 3	UG/KG	<5.0

Notes
UG/KG micrograms per kilogram

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B001	B001-2	12/5/05	2	3	Area 1	UG/KG	<12.5
B001	B001-5	12/5/05	5	6	Area 1	UG/KG	<12.5
B001	B001-10	12/5/05	10	11	Area 1	UG/KG	<12.5
B002	B002-2	12/5/05	2	3	Area 1	UG/KG	<12.5
B002	B002-5	12/5/05	5	6	Area 1	UG/KG	<12.5
B002	B002-10	12/5/05	10	11	Area 1	UG/KG	<12.5
B003	B003-2	12/7/05	2	3	Area 1	UG/KG	<12.5
B003	B003-5	12/7/05	5	6	Area 1	UG/KG	<12.5
B004	B004-2	12/8/05	2	3	Area 1	UG/KG	<12.5
B004	B004-5	12/8/05	5	6	Area 1	UG/KG	<12.5
B004	B004-10	12/8/05	10	11	Area 1	UG/KG	<12.5
B005	B005-2	12/8/05	2	3	Area 1	UG/KG	<12.5
B005	B005-5	12/8/05	5	6	Area 1	UG/KG	<12.5
B005	B005-10	12/8/05	10	11	Area 1	UG/KG	<12.5
B006	B006-2	12/12/05	2	3	Area 1	UG/KG	<12.5
B006	B006-5	12/12/05	5	6	Area 1	UG/KG	<12.5
B006	B006-10	12/12/05	10	11	Area 1	UG/KG	<12.5
B007	B007-2	12/12/05	2	3	Area 1	UG/KG	<12.5
B007	B007-5	12/12/05	5	6	Area 1	UG/KG	<12.5
B007	B007-10	12/12/05	10	11	Area 1	UG/KG	<12.5
B008	B008-2	12/8/05	2	3	Area 1	UG/KG	<12.5
B008	B008-5	12/8/05	5	6	Area 1	UG/KG	<12.5
B008	B008-10	12/8/05	10	11	Area 1	UG/KG	<12.5
B009	B009-2	12/9/05	2	3	Area 1	UG/KG	<12.5
B009	B009-5	12/9/05	5	6	Area 1	UG/KG	<12.5
B009	B009-10	12/9/05	10	11	Area 1	UG/KG	<12.5
B010	B010-2	12/9/05	2	3	Area 4	UG/KG	<12.5
B010	B010-5	12/9/05	5	6	Area 4	UG/KG	<12.5
B010	B010-10	12/9/05	10	11	Area 4	UG/KG	<12.5
B011	B011-2	1/9/06	2	3	Area 1	UG/KG	<312.5
B011	B011-5	1/9/06	5	6	Area 1	UG/KG	<12.5
B011	B011-10	1/9/06	10	11	Area 1	UG/KG	<12.5
B012	B012-2	1/6/06	2	3	Area 1	UG/KG	<12.5
B012	B012-5	1/6/06	5	6	Area 1	UG/KG	<12.5
B012	B012-10	1/6/06	10	11	Area 1	UG/KG	<12.5
B013	B013-2	12/15/05	2	3	Area 1	UG/KG	<12.5
B013	B013-5	12/15/05	5	6	Area 1	UG/KG	<125
B013	B013-10	12/15/05	10	11	Area 1	UG/KG	<12.5
B014	B014-2	12/13/05	2	3	Area 1	UG/KG	<12.5
B014	B014-5	12/13/05	5	6	Area 1	UG/KG	<12.5
B015	B015-2	12/12/05	2	3	Area 1	UG/KG	<12.5
B015	B015-5	12/12/05	5	6	Area 1	UG/KG	<12.5
B015	B015-10	12/12/05	10	11	Area 1	UG/KG	<12.5
B016	B016-2	12/13/05	2	3	Area 1	UG/KG	<12.5
B016	B016-5	12/13/05	5	6	Area 1	UG/KG	<12.5
B016	B016-10	12/13/05	10	11	Area 1	UG/KG	<12.5
B017	B017-2	12/29/05	2	3	Area 1	UG/KG	<12.5
B017	B017-5	12/29/05	5	6	Area 1	UG/KG	<12.5
B017	B017-10	12/29/05	10	11	Area 1	UG/KG	<12.5
B018	B018-2	12/29/05	2	3	Area 1	UG/KG	<12.5
B018	B018-5	12/29/05	5	6	Area 1	UG/KG	<12.5
B018	B018-10	12/29/05	10	11	Area 1	UG/KG	<12.5
B019	B019-2	12/28/05	2	3	Area 1	UG/KG	<12.5
B019	B019-5	12/28/05	5	6	Area 1	UG/KG	<12.5

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B019	B019-10	12/28/05	10	11	Area 1	UG/KG	<12.5
B020	B020-2	12/12/05	2	3	Area 1	UG/KG	<12.5
B020	B020-5	12/12/05	5	6	Area 1	UG/KG	<12.5
B020	B020-10	12/12/05	10	11	Area 1	UG/KG	<12.5
B021	B021-2	12/28/05	2	3	Area 4	UG/KG	<12.5
B021	B021-5	12/28/05	5	6	Area 4	UG/KG	<12.5
B021	B021-10	12/28/05	10	11	Area 4	UG/KG	<625
B022	B022-2	12/28/05	2	3	Area 3	UG/KG	<250
B022	B022-5	12/28/05	5	6	Area 3	UG/KG	<625
B022	B022-10	12/28/05	10	11	Area 3	UG/KG	<125
B023	B023-2	12/28/05	2	3	Area 1	UG/KG	<3125
B023	B023-5	12/28/05	5	6	Area 1	UG/KG	<1250
B023	B023-10	12/28/05	10	11	Area 1	UG/KG	<2500
B024	B024-2	12/16/05	2	2.5	Area 1	UG/KG	<25
B024	B024-5	12/16/05	5	6	Area 1	UG/KG	<12.5
B024	B024-10	12/16/05	10	11	Area 1	UG/KG	<12.5
B025	B025-2	12/15/05	2	3	Area 1	UG/KG	<12.5
B025	B025-5	12/15/05	5	6	Area 1	UG/KG	<12.5
B025	B025-10	12/15/05	10	11	Area 1	UG/KG	<12.5
B026	B026-2	12/15/05	2	3	Area 1	UG/KG	<12.5
B026	B026-5	12/15/05	5	6	Area 1	UG/KG	<12.5
B026	B026-10	12/15/05	10	11	Area 1	UG/KG	<12.5
B027	B027-2	12/14/05	2	3	Area 1	UG/KG	<125
B027	B027-5	12/15/05	5	6	Area 1	UG/KG	57.5
B028	B028-2	12/13/05	2	3	Area 1	UG/KG	<12.5
B028	B028-5	12/13/05	5	6	Area 1	UG/KG	<12.5
B028	B028-10	12/13/05	10	11	Area 1	UG/KG	<12.5
B029	B029-2	12/14/05	2	3	Area 1	UG/KG	<125
B029	B029-5	12/14/05	5	6	Area 1	UG/KG	<125
B029	B029-10	12/14/05	10	11	Area 1	UG/KG	<62.5
B030	B030-2	12/14/05	2	3	Area 1	UG/KG	<62.5
B030	B030-5	12/14/05	5	6	Area 1	UG/KG	<12.5
B030	B030-10	12/14/05	10	11	Area 1	UG/KG	<12.5
B031	B031-2	1/6/06	2	3	Area 1	UG/KG	<12.5
B031	B031-5	1/6/06	5	6	Area 1	UG/KG	<12.5
B031	B031-10	1/6/06	10	11	Area 1	UG/KG	<12.5
B032	B032-2	1/6/06	2	3	Area 1	UG/KG	<12.5
B032	B032-5	1/6/06	5	6	Area 1	UG/KG	<12.5
B032	B032-10	1/6/06	10	11	Area 1	UG/KG	<62.5
B033	B033-2	12/29/05	2	3	Area 1	UG/KG	<12.5
B033	B033-5	12/29/05	5	6	Area 1	UG/KG	<12.5
B033	B033-10	12/29/05	10	11	Area 1	UG/KG	<12.5
B034	B034-2	12/14/05	2	3	Area 1	UG/KG	<12.5
B034	B034-5	12/14/05	5	6	Area 1	UG/KG	<12.5
B034	B034-10	12/14/05	10	11	Area 1	UG/KG	<12.5
B035	B035-2	12/14/05	2	3	Area 1	UG/KG	<62.5
B035	B035-5	12/14/05	5	6	Area 1	UG/KG	<12.5
B035	B035-10	12/14/05	10	11	Area 1	UG/KG	<12.5
B036	B036-2	12/14/05	2	3	Area 1	UG/KG	<12.5
B036	B036-5	12/14/05	5	6	Area 1	UG/KG	<12.5
B036	B036-10	12/14/05	10	11	Area 1	UG/KG	<12.5
B037	B037-2	12/19/05	2	3	Area 1	UG/KG	<12.5
B037	B037-5	12/19/05	5	6	Area 1	UG/KG	<12.5
B037	B037-10	12/19/05	10	11	Area 1	UG/KG	<12.5

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B038	B038-2	12/19/05	2	3	Area 1	UG/KG	<125
B038	B038-5	12/19/05	5	6	Area 1	UG/KG	<12.5
B038	B038-10	12/19/05	10	11	Area 1	UG/KG	<12.5
B039	B039-2	12/16/05	2	3	Area 1	UG/KG	<12.5
B039	B039-5	12/16/05	5	6	Area 1	UG/KG	<12.5
B039	B039-10	12/16/05	10	11	Area 1	UG/KG	<12.5
B040	B040-2	12/19/05	2	3	Area 1	UG/KG	<62.5
B040	B040-5	12/19/05	5	6	Area 1	UG/KG	<12.5
B040	B040-10	12/19/05	10	11	Area 1	UG/KG	<12.5
B041	B041-2	12/28/05	2	3	Area 3	UG/KG	<12.5
B041	B041-5	12/28/05	5	6	Area 3	UG/KG	<12.5
B041	B041-10	12/28/05	10	11	Area 3	UG/KG	<12.5
B042	B042-2	12/20/05	2	3	Area 3	UG/KG	<250
B042	B042-5	12/20/05	5	6	Area 3	UG/KG	<125
B042	B042-10	12/20/05	10	11	Area 3	UG/KG	<12.5
B043	B043-2	12/16/05	2	3	Area 1	UG/KG	<62.5
B043	B043-5	12/16/05	5	6	Area 1	UG/KG	<250
B043	B043-10	12/16/05	10	11	Area 1	UG/KG	<12.5
B044	B044-2	12/16/05	2	3	Area 1	UG/KG	<12.5
B044	B044-5	12/16/05	5	6	Area 1	UG/KG	<12.5
B044	B044-10	12/16/05	10	11	Area 1	UG/KG	4.375
B045	B045-2	12/15/05	2	3	Area 1	UG/KG	<1250
B045	B045-5	12/15/05	5	6	Area 1	UG/KG	<125
B045	B045-10	12/15/05	10	11	Area 1	UG/KG	<12.5
B046	B046-2	12/15/05	2	3	Area 1	UG/KG	<125
B046	B046-5	12/15/05	5	6	Area 1	UG/KG	<12.5
B046	B046-10	12/15/05	10	11	Area 1	UG/KG	<12.5
B047	B047-2	12/15/05	2	3	Area 1	UG/KG	<12.5
B047	B047-5	12/15/05	5	6	Area 1	UG/KG	<12.5
B047	B047-10	12/15/05	10	11	Area 1	UG/KG	<12.5
B048	B048-2	12/20/05	2	3	Area 1	UG/KG	<12.5
B048	B048-5	12/20/05	5	6	Area 1	UG/KG	<12.5
B048	B048-10	12/20/05	10	11	Area 1	UG/KG	<125
B049	B049-2	12/14/05	2	3	Area 1	UG/KG	<12.5
B049	B049-5	12/14/05	5	6	Area 1	UG/KG	<12.5
B049	B049-10	12/14/05	10	11	Area 1	UG/KG	<12.5
B050	B050-2	12/13/05	2	3	Area 1	UG/KG	51.25
B050	B050-5	12/13/05	5	6	Area 1	UG/KG	<12.5
B050	B050-10	12/12/05	10	11	Area 1	UG/KG	<125
B051	B051-2	12/13/05	2	3	Area 1	UG/KG	<12.5
B051	B051-5	12/13/05	5	6	Area 1	UG/KG	<12.5
B051	B051-10	12/13/05	10	11	Area 1	UG/KG	<12.5
B052	B052-2	12/29/05	2	3	Area 1	UG/KG	<625
B052	B052-5	12/29/05	5	6	Area 1	UG/KG	<25
B052	B052-10	12/29/05	10	11	Area 1	UG/KG	<625
B053	B053-2	12/28/05	2	3	Area 1	UG/KG	<12.5
B053	B053-5	12/28/05	5	6	Area 1	UG/KG	<12.5
B053	B053-10	12/28/05	10	11	Area 1	UG/KG	<12.5
B054	B054-2	12/13/05	2	3	Area 1	UG/KG	<125
B054	B054-5	12/13/05	5	6	Area 1	UG/KG	61.25
B054	B054-10	12/13/05	10	11	Area 1	UG/KG	<12.5
B055	B055-2	12/21/05	2	3	Area 1	UG/KG	<1250
B055	B055-5	12/21/05	5	6	Area 1	UG/KG	388.75
B055	B055-10	12/21/05	10	11	Area 1	UG/KG	<6250

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B056	B056-2	12/14/05	2	3	Area 1	UG/KG	<12.5
B056	B056-5	12/14/05	5	6	Area 1	UG/KG	<12.5
B056	B056-10	12/14/05	10	11	Area 1	UG/KG	<12.5
B057	B057-2	12/13/05	2	3	Area 1	UG/KG	51.25
B057	B057-5	12/13/05	5	6	Area 1	UG/KG	<12.5
B057	B057-10	12/13/05	10	11	Area 1	UG/KG	<12.5
B058	B058-5	12/20/05	5	6	Area 1	UG/KG	<125
B058	B058-10	12/20/05	10	11	Area 1	UG/KG	<625
B059	B059-2	12/20/05	2	3	Area 1	UG/KG	<12.5
B059	B059-5	12/20/05	5	6	Area 1	UG/KG	<12.5
B059	B059-10	12/20/05	10	11	Area 1	UG/KG	<12.5
B060	B060-2	12/20/05	2	3	Area 1	UG/KG	<12.5
B060	B060-5	12/20/05	5	6	Area 1	UG/KG	<12.5
B060	B060-10	12/20/05	10	11	Area 1	UG/KG	<125
B061	B061-2	12/20/05	2	3	Area 1	UG/KG	<12.5
B061	B061-5	12/20/05	5	6	Area 1	UG/KG	<12.5
B061	B061-10	12/20/05	10	11	Area 1	UG/KG	<12.5
B062	B062-2	12/21/05	2	3	Area 1	UG/KG	<12.5
B062	B062-5	12/21/05	5	6	Area 1	UG/KG	<12.5
B062	B062-10	12/21/05	10	11	Area 1	UG/KG	<12.5
B063	B063-2	1/9/06	2	3	Area 3	UG/KG	<62.5
B063	B063-5	1/9/06	5	6	Area 3	UG/KG	<12.5
B063	B063-10	1/9/06	10	11	Area 3	UG/KG	<12.5
B064	B064-2	12/23/05	2	3	Area 1	UG/KG	<62.5
B064	B064-5	12/23/05	5	6	Area 1	UG/KG	<12.5
B064	B064-10	12/23/05	10	11	Area 1	UG/KG	<12.5
B065	B065-2	1/12/06	2	3	Area 1	UG/KG	<12.5
B065	B065-5	1/12/06	5	6	Area 1	UG/KG	<12.5
B065	B065-10	1/12/06	10	11	Area 1	UG/KG	<12.5
B066	B066-2	1/12/06	2	3	Area 1	UG/KG	<12.5
B066	B066-5	1/12/06	5	6	Area 1	UG/KG	<12.5
B066	B066-10	1/12/06	10	11	Area 1	UG/KG	<12.5
B067	B067-2	12/21/05	2	3	Area 1	UG/KG	223.75
B067	B067-5	12/21/05	5	6	Area 1	UG/KG	<250
B067	B067-10	12/21/05	10	11	Area 1	UG/KG	112.5
B068	B068-2	12/21/05	2	3	Area 1	UG/KG	<12.5
B068	B068-10	12/21/05	10	11	Area 1	UG/KG	<62.5
B069	B069-2	12/22/05	2	3	Area 1	UG/KG	<12.5
B069	B069-5	12/22/05	5	6	Area 1	UG/KG	<12.5
B069	B069-10	12/22/05	10	11	Area 1	UG/KG	<12.5
B070	B070-2	12/22/05	2	3	Area 1	UG/KG	<12.5
B070	B070-5	12/22/05	5	6	Area 1	UG/KG	<12.5
B070	B070-10	12/22/05	10	11	Area 1	UG/KG	<62.5
B071	B071-2	12/21/05	2	3	Area 1	UG/KG	<12.5
B071	B071-5	12/21/05	5	6	Area 1	UG/KG	<12.5
B072	B072-2	12/21/05	2	3	Area 1	UG/KG	<12.5
B072	B072-5	12/21/05	5	6	Area 1	UG/KG	<12.5
B072	B072-10	12/21/05	10	11	Area 1	UG/KG	<12.5
B073	B073-2	1/30/06	2	3	Area 3	UG/KG	<12.5
B073	B073-5	1/30/06	5	6	Area 3	UG/KG	<12.5
B073	B073-10	1/30/06	10	11	Area 3	UG/KG	<12.5
B074	B074-2	1/11/06	2	3	Area 2	UG/KG	<12.5
B074	B074-5	1/11/06	5	6	Area 2	UG/KG	<12.5
B074	B074-10	1/11/06	10	11	Area 2	UG/KG	<12.5

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B075	B075-2	1/11/06	2	3	Area 1	UG/KG	<12.5
B075	B075-5	1/11/06	5	6	Area 1	UG/KG	<12.5
B075	B075-10	1/11/06	10	11	Area 1	UG/KG	<12.5
B076	B076-2	12/22/05	2	3	Area 2	UG/KG	<125
B077	B077-2	12/23/05	2	3	Area 2	UG/KG	<12.5
B077	B077-5	12/23/05	5	6	Area 2	UG/KG	<12.5
B077	B077-10	12/23/05	10	11	Area 2	UG/KG	<12.5
B078	B078-2	12/23/05	2	3	Area 2	UG/KG	<12.5
B078	B078-5	12/23/05	5	6	Area 2	UG/KG	<12.5
B078	B078-10	12/23/05	10	11	Area 2	UG/KG	<12.5
B079	B079-2	12/23/05	2	3	Area 2	UG/KG	<62.5
B079	B079-5	12/23/05	5	6	Area 2	UG/KG	<62.5
B079	B079-10	12/23/05	10	11	Area 2	UG/KG	<12.5
B080	B080-2	12/22/05	2	3	Area 1	UG/KG	110
B080	B080-5	12/22/05	5	6	Area 1	UG/KG	147.5
B080	B080-10	12/22/05	10	11	Area 1	UG/KG	<12.5
B081	B081-2	12/22/05	2	3	Area 1	UG/KG	<62.5
B081	B081-5	12/22/05	5	6	Area 1	UG/KG	<12.5
B081	B081-10	12/22/05	10	11	Area 1	UG/KG	<12.5
B082	B082-2	12/23/05	2	3	Area 1	UG/KG	<12.5
B082	B082-5	12/23/05	5	6	Area 1	UG/KG	<12.5
B082	B082-10	12/23/05	10	11	Area 1	UG/KG	<12.5
B083	B083-2	1/4/06	2	3	Area 2	UG/KG	<625
B083	B083-5	1/4/06	5	6	Area 2	UG/KG	<12.5
B083	B083-10	1/4/06	10	11	Area 2	UG/KG	<12.5
B084	B084-2	1/5/06	2	3	Area 2	UG/KG	18.75
B084	B084-5	1/5/06	5	6	Area 2	UG/KG	<62.5
B084	B084-10	1/5/06	10	11	Area 2	UG/KG	<12.5
B085	B085-2	12/28/05	2	3	Area 2	UG/KG	<12.5
B085	B085-5	12/28/05	5	6	Area 2	UG/KG	<12.5
B085	B085-10	12/28/05	10	11	Area 2	UG/KG	<12.5
B086	B086-2	1/11/06	2	3	Area 2	UG/KG	<12.5
B086	B086-5	1/11/06	5	6	Area 2	UG/KG	<12.5
B086	B086-10	1/11/06	10	11	Area 2	UG/KG	<12.5
B087	B087-2	1/11/06	2	3	Area 2	UG/KG	<12.5
B087	B087-5	1/11/06	5	6	Area 2	UG/KG	<12.5
B087	B087-10	1/11/06	10	11	Area 2	UG/KG	<12.5
B088	B088-2	1/18/06	2	3	Area 2	UG/KG	<12.5
B088	B088-5	1/18/06	5	6	Area 2	UG/KG	<12.5
B088	B088-10	1/18/06	10	11	Area 2	UG/KG	<12.5
B089	B089-2	1/9/06	2	3	Area 2	UG/KG	<25
B089	B089-5	1/9/06	5	6	Area 2	UG/KG	<25
B089	B089-10	1/9/06	10	11	Area 2	UG/KG	<25
B090	B090-2	1/10/06	2	3	Area 2	UG/KG	<12.5
B090	B090-5	1/10/06	5	6	Area 2	UG/KG	<12.5
B090	B090-10	1/10/06	10	11	Area 2	UG/KG	<12.5
B091	B091-2	1/10/06	2	3	Area 2	UG/KG	<12.5
B091	B091-5	1/10/06	5	6	Area 2	UG/KG	<12.5
B091	B091-10	1/10/06	10	11	Area 2	UG/KG	<12.5
B092	B092-2	1/5/06	2	3	Area 2	UG/KG	<62.5
B092	B092-5	1/5/06	5	6	Area 2	UG/KG	<12.5
B092	B092-10	1/5/06	10	11	Area 2	UG/KG	<12.5
B093	B093-2	1/5/06	2	3	Area 2	UG/KG	82.5
B093	B093-5	1/5/06	5	6	Area 2	UG/KG	<12.5

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B093	B093-10	1/5/06	10	11	Area 2	UG/KG	<12.5
B094	B094-2	1/5/06	2	3	Area 2	UG/KG	<12.5
B094	B094-5	1/5/06	5	6	Area 2	UG/KG	<12.5
B094	B094-10	1/5/06	10	11	Area 2	UG/KG	<12.5
B095	B095-2	1/4/06	2	3	Area 2	UG/KG	<12.5
B095	B095-5	1/4/06	5	6	Area 2	UG/KG	<12.5
B095	B095-10	1/4/06	10	11	Area 2	UG/KG	<12.5
B096	B096-2	12/28/05	2	3	Area 2	UG/KG	<12.5
B096	B096-5	12/28/05	5	6	Area 2	UG/KG	<12.5
B096	B096-10	12/28/05	10	11	Area 2	UG/KG	<12.5
B097	B097-2	1/5/06	2	3	Area 2	UG/KG	<12.5
B097	B097-5	1/5/06	5	6	Area 2	UG/KG	<12.5
B097	B097-10	1/5/06	10	11	Area 2	UG/KG	<12.5
B098	B098-2	1/4/06	2	3	Area 2	UG/KG	<12.5
B098	B098-5	1/4/06	5	6	Area 2	UG/KG	<12.5
B098	B098-10	1/4/06	10	11	Area 2	UG/KG	<12.5
B099	B099-2	1/3/06	2	3	Area 2	UG/KG	<12.5
B099	B099-5	1/3/06	5	6	Area 2	UG/KG	<12.5
B099	B099-10	1/3/06	10	11	Area 2	UG/KG	<12.5
B100	B100-2	1/10/06	2	3	Area 2	UG/KG	<12.5
B100	B100-5	1/10/06	5	6	Area 2	UG/KG	<12.5
B100	B100-10	1/10/06	10	11	Area 2	UG/KG	<12.5
B101	B101-2	1/10/06	2	3	Area 2	UG/KG	<12.5
B101	B101-5	1/10/06	5	6	Area 2	UG/KG	<12.5
B101	B101-10	1/10/06	10	11	Area 2	UG/KG	<12.5
B102	B102-2	1/9/06	2	3	Area 2	UG/KG	<62.5
B102	B102-5	1/9/06	5	6	Area 2	UG/KG	<12.5
B102	B102-10	1/9/06	10	11	Area 2	UG/KG	<12.5
B103	B103-2	1/6/06	2	3	Area 2	UG/KG	<12.5
B103	B103-5	1/6/06	5	6	Area 2	UG/KG	<12.5
B103	B103-10	1/6/06	10	11	Area 2	UG/KG	<12.5
B104	B104-2	2/3/06	2	3	Area 2	UG/KG	<12.5
B104	B104-5	2/3/06	5	6	Area 2	UG/KG	<12.5
B104	B104-10	2/3/06	10	11	Area 2	UG/KG	<12.5
B105	B105-2	1/10/06	2	3	Area 2	UG/KG	<12.5
B105	B105-5	1/10/06	5	6	Area 2	UG/KG	<12.5
B105	B105-10	1/10/06	10	11	Area 2	UG/KG	<12.5
B106	B106-2	12/29/05	2	3	Area 2	UG/KG	<12.5
B106	B106-5	12/29/05	5	6	Area 2	UG/KG	<12.5
B106	B106-10	12/29/05	10	10.5	Area 2	UG/KG	<12.5
B107	B107-2	1/4/06	2	3	Area 2	UG/KG	<12.5
B107	B107-5	1/4/06	5	6	Area 2	UG/KG	<12.5
B107	B107-10	1/4/06	10	11	Area 2	UG/KG	<12.5
B108	B108-2	1/9/06	2	3	Area 2	UG/KG	<12.5
B108	B108-5	1/9/06	5	6	Area 2	UG/KG	<12.5
B108	B108-10	1/9/06	10	11	Area 2	UG/KG	<12.5
B109	B109-2	1/4/06	2	3	Area 2	UG/KG	<12.5
B109	B109-5	1/4/06	5	6	Area 2	UG/KG	<12.5
B109	B109-10	1/4/06	10	11	Area 2	UG/KG	<12.5
B110	B110-2	12/28/05	2	3	Area 2	UG/KG	<12.5
B110	B110-5	12/28/05	5	6	Area 2	UG/KG	<12.5
B110	B110-10	12/28/05	10	11	Area 2	UG/KG	<12.5
B111	B111-2	12/28/05	2	3	Area 2	UG/KG	6.25
B111	B111-5	12/28/05	5	6	Area 2	UG/KG	<12.5

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B111	B111-10	12/28/05	10	11	Area 2	UG/KG	<12.5
B112	B112-2	12/29/05	2	3	Area 2	UG/KG	<12.5
B112	B112-5	12/29/05	5	6	Area 2	UG/KG	<12.5
B112	B112-10	12/29/05	10	11	Area 2	UG/KG	<12.5
B113	B113-2	12/29/05	2	3	Area 2	UG/KG	<12.5
B113	B113-5	12/29/05	5	6	Area 2	UG/KG	<12.5
B113	B113-10	12/29/05	10	11	Area 2	UG/KG	<12.5
B114	B114-2	1/3/06	2	3	Area 2	UG/KG	<62.5
B114	B114-5	1/3/06	5	6	Area 2	UG/KG	<12.5
B114	B114-10	1/3/06	10	11	Area 2	UG/KG	<12.5
B115	B115-2	1/3/06	2	3	Area 2	UG/KG	77.5
B115	B115-5	1/3/06	5	6	Area 2	UG/KG	222.5
B115	B115-10	1/3/06	10	11	Area 2	UG/KG	<12.5
B116	B116-2	1/4/06	2	3	Area 2	UG/KG	<12.5
B116	B116-5	1/4/06	5	6	Area 2	UG/KG	<12.5
B116	B116-10	1/4/06	10	11	Area 2	UG/KG	<12.5
B117	B117-2	1/6/06	2	3	Area 2	UG/KG	<12.5
B117	B117-5	1/6/06	5	6	Area 2	UG/KG	<12.5
B117	B117-10	1/6/06	10	11	Area 2	UG/KG	<12.5
B118	B118-2	1/6/06	2	3	Area 2	UG/KG	<12.5
B118	B118-5	1/6/06	5	6	Area 2	UG/KG	<12.5
B118	B118-10	1/6/06	10	11	Area 2	UG/KG	<12.5
B119	B119-2	1/27/06	2	3	Area 2	UG/KG	<62.5
B119	B119-5	1/27/06	5	6	Area 2	UG/KG	<12.5
B119	B119-10	1/27/06	10	11	Area 2	UG/KG	<12.5
B120	B120-2	1/30/06	2	3	Area 4	UG/KG	2.875
B120	B120-5	1/30/06	5	6	Area 4	UG/KG	<12.5
B120	B120-10	1/30/06	10	11	Area 4	UG/KG	<12.5
B121	B121-2	2/1/06	2	3	Area 4	UG/KG	<62.5
B121	B121-5	2/1/06	5	6	Area 4	UG/KG	<312.5
B121	B121-10	2/1/06	10	11	Area 4	UG/KG	<62.5
B122	B122-2	1/23/06	2	3	Area 4	UG/KG	16.25
B122	B122-5	1/23/06	5	6	Area 4	UG/KG	<625
B122	B122-10	1/23/06	10	11	Area 4	UG/KG	<12.5
B123	B123-2	1/20/06	2	3	Area 4	UG/KG	<12.5
B123	B123-5	1/20/06	5	6	Area 4	UG/KG	<12.5
B124	B124-2	1/16/06	2	3	Area 4	UG/KG	3.125
B124	B124-5	1/16/06	5	6	Area 4	UG/KG	<12.5
B124	B124-10	1/16/06	10	11	Area 4	UG/KG	<12.5
B125	B125-2	1/20/06	2	3	Area 4	UG/KG	<12.5
B125	B125-5	1/20/06	5	6	Area 4	UG/KG	<12.5
B125	B125-10	1/20/06	10	11	Area 4	UG/KG	<12.5
B126	B126-2	1/20/06	2	3	Area 4	UG/KG	<12.5
B126	B126-5	1/20/06	5	6	Area 4	UG/KG	<12.5
B126	B126-10	1/20/06	10	11	Area 4	UG/KG	<12.5
B127	B127-2	1/18/06	2	3	Area 4	UG/KG	<12.5
B127	B127-5	1/18/06	5	6	Area 4	UG/KG	<12.5
B127	B127-10	1/18/06	10	11	Area 4	UG/KG	<12.5
B128	B128-2	2/1/06	2	3	Area 4	UG/KG	<312.5
B128	B128-5	2/1/06	5	6	Area 4	UG/KG	<312.5
B128	B128-10	2/1/06	10	11	Area 4	UG/KG	<62.5
B129	B129-2	1/18/06	2	3	Area 4	UG/KG	<12.5
B129	B129-5	1/18/06	5	6	Area 4	UG/KG	3.125
B129	B129-10	1/18/06	10	11	Area 4	UG/KG	<12.5

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B130	B130-2	1/19/06	2	3	Area 4	UG/KG	<12.5
B130	B130-5	1/19/06	5	6	Area 4	UG/KG	<12.5
B130	B130-10	1/19/06	10	11	Area 4	UG/KG	<12.5
B131	B131-2	1/19/06	2	3	Area 4	UG/KG	<12.5
B131	B131-5	1/19/06	5	6	Area 4	UG/KG	<12.5
B131	B131-10	1/19/06	10	11	Area 4	UG/KG	<12.5
B132	B132-2	1/19/06	2	3	Area 4	UG/KG	<12.5
B132	B132-5	1/19/06	5	6	Area 4	UG/KG	<12.5
B132	B132-10	1/19/06	10	11	Area 4	UG/KG	<12.5
B134	B134-2	1/23/06	2	3	Area 4	UG/KG	<12.5
B134	B134-5	1/23/06	5	6	Area 4	UG/KG	<12.5
B134	B134-10	1/23/06	10	11	Area 4	UG/KG	<12.5
B135	B135-2	1/16/06	2	3	Area 4	UG/KG	<12.5
B135	B135-5	1/16/06	5	6	Area 4	UG/KG	<12.5
B135	B135-10	1/16/06	10	11	Area 4	UG/KG	<12.5
B136	B136-2	1/12/06	2	3	Area 4	UG/KG	<12.5
B136	B136-5	1/12/06	5	6	Area 4	UG/KG	<12.5
B136	B136-10	1/12/06	10	11	Area 4	UG/KG	<25
B137	B137-2	1/13/06	2	3	Area 4	UG/KG	<12.5
B137	B137-5	1/13/06	5	6	Area 4	UG/KG	<12.5
B137	B137-10	1/13/06	10	11	Area 4	UG/KG	<12.5
B139	B139-2	1/13/06	2	3	Area 4	UG/KG	<12.5
B139	B139-5	1/13/06	5	6	Area 4	UG/KG	<12.5
B139	B139-10	1/13/06	10	11	Area 4	UG/KG	<12.5
B140	B140-2	1/31/06	2	3	Area 4	UG/KG	<12.5
B140	B140-5	1/31/06	5	6	Area 4	UG/KG	<12.5
B140	B140-10	1/31/06	10	11	Area 4	UG/KG	<12.5
B141	B141-2	1/30/06	2	3	Area 3	UG/KG	<12.5
B141	B141-5	1/30/06	5	6	Area 3	UG/KG	<12.5
B141	B141-10	1/30/06	10	11	Area 3	UG/KG	<12.5
B142	B142-2	1/31/06	2	3	Area 3	UG/KG	<12.5
B142	B142-5	1/31/06	5	6	Area 3	UG/KG	<12.5
B142	B142-10	1/31/06	10	11	Area 3	UG/KG	<12.5
B143	B143-2	1/18/06	2	3	Area 3	UG/KG	<12.5
B143	B143-5	1/18/06	5	6	Area 3	UG/KG	<12.5
B143	B143-10	1/18/06	10	11	Area 3	UG/KG	<12.5
B144	B144-2	1/13/06	2	3	Area 3	UG/KG	<12.5
B144	B144-5	1/13/06	5	6	Area 3	UG/KG	<12.5
B144	B144-10	1/13/06	10	11	Area 3	UG/KG	<12.5
B145	B145-2	1/19/06	2	3	Area 3	UG/KG	<12.5
B145	B145-5	1/19/06	5	6	Area 3	UG/KG	<12.5
B145	B145-10	1/19/06	10	11	Area 3	UG/KG	<12.5
B146	B146-2	1/27/06	2	3	Area 3	UG/KG	<12.5
B146	B146-5	1/27/06	5	6	Area 3	UG/KG	<12.5
B146	B146-10	1/27/06	10	11	Area 3	UG/KG	<12.5
B147	B147-2	2/1/06	2	3	Area 3	UG/KG	<12.5
B147	B147-5	2/1/06	5	6	Area 3	UG/KG	<12.5
B147	B147-10	2/1/06	10	11	Area 3	UG/KG	<12.5
B148	B148-2	1/23/06	2	3	Area 3	UG/KG	<12.5
B148	B148-5	1/23/06	5	6	Area 3	UG/KG	<12.5
B148	B148-10	1/23/06	10	11	Area 3	UG/KG	<12.5
B149	B149-2	1/23/06	2	3	Area 3	UG/KG	<12.5
B149	B149-5	1/23/06	5	6	Area 3	UG/KG	<12.5
B150	B150-2	1/20/06	2	3	Area 3	UG/KG	42.5

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B150	B150-5	1/20/06	5	6	Area 3	UG/KG	<62.5
B150	B150-10	1/20/06	10	11	Area 3	UG/KG	<625
B151	B151-2	1/19/06	2	3	Area 4	UG/KG	<12.5
B151	B151-5	1/19/06	5	6	Area 4	UG/KG	17.5
B151	B151-10	1/19/06	10	11	Area 4	UG/KG	<12.5
B152	B152-5	1/20/06	5	6	Area 3	UG/KG	<12.5
B152	B152-10	1/20/06	10	11	Area 3	UG/KG	<12.5
B153	B153-2	1/20/06	2	3	Area 3	UG/KG	<62.5
B153	B153-5	1/20/06	5	6	Area 3	UG/KG	<12.5
B153	B153-10	1/20/06	10	11	Area 3	UG/KG	<62.5
B154	B154-2	1/16/06	2	3	Area 3	UG/KG	51.25
B154	B154-5	1/16/06	5	6	Area 3	UG/KG	<12.5
B154	B154-10	1/16/06	10	11	Area 3	UG/KG	<12.5
B155	B155-2	1/30/06	2	3	Area 3	UG/KG	12.5
B155	B155-5	1/30/06	5	6	Area 3	UG/KG	<12.5
B155	B155-10	1/30/06	10	11	Area 3	UG/KG	<12.5
B156	B156-2	1/13/06	2	3	Area 3	UG/KG	18.75
B156	B156-5	1/13/06	5	6	Area 3	UG/KG	<12.5
B156	B156-10	1/13/06	10	11	Area 3	UG/KG	<625
B158	B158-2	1/30/06	2	3	Area 3	UG/KG	<12.5
B158	B158-5	1/30/06	5	6	Area 3	UG/KG	<12.5
B158	B158-10	1/30/06	10	11	Area 3	UG/KG	<12.5
B159	B159-2	1/31/06	2	3	Area 3	UG/KG	<12.5
B159	B159-5	1/31/06	5	6	Area 3	UG/KG	<62.5
B159	B159-10	1/31/06	10	11	Area 3	UG/KG	<62.5
B160	B160-2	1/31/06	2	3	Area 3	UG/KG	<12.5
B160	B160-5	1/31/06	5	6	Area 3	UG/KG	<12.5
B160	B160-10	1/31/06	10	11	Area 3	UG/KG	<12.5
B161	B161-2	1/13/06	2	3	Area 3	UG/KG	<12.5
B161	B161-5	1/13/06	5	6	Area 3	UG/KG	<625
B161	B161-10	1/13/06	10	11	Area 3	UG/KG	<12.5
B162	B162-2	1/16/06	2	3	Area 3	UG/KG	5.625
B162	B162-5	1/16/06	5	6	Area 3	UG/KG	<12.5
B162	B162-10	1/16/06	10	11	Area 3	UG/KG	<12.5
B163	B163-2	1/16/06	2	3	Area 3	UG/KG	<12.5
B163	B163-5	1/16/06	5	6	Area 3	UG/KG	<12.5
B163	B163-10	1/16/06	10	11	Area 3	UG/KG	<125
B164	B164-2	1/16/06	2	3	Area 3	UG/KG	<12.5
B164	B164-5	1/16/06	5	6	Area 3	UG/KG	<12.5
B164	B164-10	1/16/06	10	11	Area 3	UG/KG	<12.5
B165	B165-2	1/23/06	2	3	Area 3	UG/KG	<12.5
B165	B165-5	1/23/06	5	6	Area 3	UG/KG	9.875
B165	B165-10	1/23/06	10	11	Area 3	UG/KG	<12.5
B166	B166-2	1/24/06	2	3	Area 3	UG/KG	<12.5
B166	B166-5	1/24/06	5	6	Area 3	UG/KG	<12.5
B166	B166-10	1/24/06	10	11	Area 3	UG/KG	<12.5
B167	B167-2	1/17/06	2	3	Area 3	UG/KG	<12.5
B167	B167-5	1/17/06	5	6	Area 3	UG/KG	<12.5
B167	B167-10	1/17/06	10	11	Area 3	UG/KG	<12.5
B168	B168-2	1/17/06	2	3	Area 3	UG/KG	<62.5
B168	B168-5	1/17/06	5	6	Area 3	UG/KG	<12.5
B168	B168-10	1/17/06	10	11	Area 3	UG/KG	<12.5
B169	B169-2	1/17/06	2	3	Area 3	UG/KG	<125
B169	B169-5	1/17/06	5	6	Area 3	UG/KG	<12.5

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B169	B169-10	1/17/06	10	11	Area 3	UG/KG	<12.5
B170	B170-2	1/18/06	2	3	Area 3	UG/KG	<12.5
B170	B170-5	1/18/06	5	6	Area 3	UG/KG	<12.5
B170	B170-10	1/18/06	10	11	Area 3	UG/KG	<12.5
B171	B171-2	1/11/06	2	3	Area 3	UG/KG	<25
B171	B171-5	1/11/06	5	6	Area 3	UG/KG	<12.5
B171	B171-10	1/11/06	10	11	Area 3	UG/KG	<12.5
B172	B172-2	1/12/06	2	3	Area 3	UG/KG	<12.5
B172	B172-5	1/12/06	5	6	Area 3	UG/KG	<12.5
B172	B172-10	1/12/06	10	11	Area 3	UG/KG	<12.5
B173	B173-2	1/12/06	2	3	Area 3	UG/KG	<12.5
B173	B173-5	1/12/06	5	6	Area 3	UG/KG	<12.5
B173	B173-10	1/12/06	10	11	Area 3	UG/KG	<12.5
B174	B174-2	1/12/06	2	3	Area 3	UG/KG	<62.5
B174	B174-5	1/12/06	5	6	Area 3	UG/KG	<12.5
B174	B174-10	1/12/06	10	11	Area 3	UG/KG	<12.5
B175	B175-2	2/7/06	2	3	Area 3	UG/KG	<12.5
B175	B175-5	2/7/06	5	6	Area 3	UG/KG	<12.5
B175	B175-10	2/7/06	10	11	Area 3	UG/KG	<12.5
B176	B176-2	2/7/06	2	3	Area 3	UG/KG	<125
B176	B176-5	2/7/06	5	6	Area 3	UG/KG	<12.5
B176	B176-10	2/7/06	10	11	Area 3	UG/KG	<62.5
B177	B177-2	2/2/06	2	3	Area 3	UG/KG	<12.5
B177	B177-5	2/2/06	5	6	Area 3	UG/KG	<12.5
B177	B177-10	2/2/06	10	11	Area 3	UG/KG	<12.5
B178	B178-2	2/2/06	2	3	Area 3	UG/KG	<125
B178	B178-5	2/2/06	5	6	Area 3	UG/KG	<12.5
B178	B178-10	2/2/06	10	11	Area 3	UG/KG	<12.5
B179	B179-2	1/26/06	2	3	Area 3	UG/KG	<12.5
B179	B179-5	1/26/06	5	6	Area 3	UG/KG	<12.5
B179	B179-10	1/26/06	10	11	Area 3	UG/KG	<12.5
B180	B180-2	1/26/06	2	3	Area 3	UG/KG	<12.5
B180	B180-5	1/26/06	5	6	Area 3	UG/KG	<12.5
B180	B180-10	1/26/06	10	11	Area 3	UG/KG	<12.5
B181	B181-2	2/6/06	2	3	Area 3	UG/KG	<12.5
B181	B181-5	2/6/06	5	6	Area 3	UG/KG	<125
B181	B181-10	2/6/06	10	11	Area 3	UG/KG	<12.5
B182	B182-2	1/24/06	2	3	Area 3	UG/KG	<12.5
B182	B182-5	1/25/06	5	6	Area 3	UG/KG	<125
B182	B182-10	1/25/06	10	11	Area 3	UG/KG	<12.5
B183	B183-2	1/25/06	2	3	Area 3	UG/KG	<250
B183	B183-5	1/25/06	5	6	Area 3	UG/KG	<12.5
B183	B183-10	1/25/06	10	11	Area 3	UG/KG	306.25
B184	B184-2	1/25/06	2	3	Area 3	UG/KG	<125
B184	B184-5	1/25/06	5	6	Area 3	UG/KG	<12.5
B184	B184-10	1/25/06	10	11	Area 3	UG/KG	<12.5
B185	B185-2	1/26/06	2	3	Area 3	UG/KG	<12.5
B185	B185-5	1/26/06	5	6	Area 3	UG/KG	<12.5
B185	B185-10	1/26/06	10	11	Area 3	UG/KG	<12.5
B186	B186-2	1/27/06	2	3	Area 3	UG/KG	<125
B186	B186-5	1/27/06	5	6	Area 3	UG/KG	<12.5
B186	B186-10	1/27/06	10	11	Area 3	UG/KG	<12.5
B187	B187-2	1/27/06	2	3	Area 3	UG/KG	<62.5
B187	B187-5	1/27/06	5	6	Area 3	UG/KG	<12.5

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B187	B187-10	1/27/06	10	11	Area 3	UG/KG	<12.5
B188	B188-2	2/7/06	2	3	Area 2	UG/KG	<12.5
B188	B188-5	2/7/06	5	6	Area 2	UG/KG	<125
B188	B188-10	2/7/06	10	11	Area 2	UG/KG	<12.5
B189	B189-2	2/7/06	2	3	Area 2	UG/KG	<12.5
B189	B189-5	2/7/06	5	6	Area 2	UG/KG	<12.5
B189	B189-10	2/7/06	10	11	Area 2	UG/KG	<12.5
B190	B190-2	2/8/06	2	3	Area 2	UG/KG	<12.5
B190	B190-5	2/8/06	5	6	Area 2	UG/KG	<12.5
B190	B190-10	2/8/06	10	11	Area 2	UG/KG	<12.5
B191	B191-2	2/1/06	2	3	Area 2	UG/KG	<125
B191	B191-5	2/1/06	5	6	Area 2	UG/KG	<125
B191	B191-10	2/1/06	10	11	Area 2	UG/KG	<125
B192	B192-2	2/1/06	2	3	Area 2	UG/KG	<12.5
B192	B192-5	2/1/06	5	6	Area 2	UG/KG	<12.5
B192	B192-10	2/1/06	10	11	Area 2	UG/KG	<12.5
B193	B193-2	2/6/06	2	3	Area 3	UG/KG	<12.5
B193	B193-5	2/6/06	5	6	Area 3	UG/KG	<12.5
B193	B193-10	2/6/06	10	11	Area 3	UG/KG	<12.5
B194	B194-2	2/3/06	2	3	Area 3	UG/KG	<62.5
B194	B194-5	2/3/06	5	6	Area 3	UG/KG	<12.5
B194	B194-10	2/3/06	10	11	Area 3	UG/KG	<125
B195	B195-2	2/3/06	2	3	Area 3	UG/KG	<62.5
B195	B195-5	2/3/06	5	6	Area 3	UG/KG	<12.5
B195	B195-10	2/3/06	10	11	Area 3	UG/KG	<12.5
B196	B196-2	1/25/06	2	3	Area 3	UG/KG	<12.5
B196	B196-5	1/25/06	5	6	Area 3	UG/KG	<12.5
B196	B196-10	1/25/06	10	11	Area 3	UG/KG	<12.5
B197	B197-2	2/1/06	2	3	Area 3	UG/KG	<12.5
B197	B197-5	2/1/06	5	6	Area 3	UG/KG	<12.5
B197	B197-10	2/1/06	10	11	Area 3	UG/KG	<12.5
B198	B198-2	1/26/06	2	3	Area 3	UG/KG	<12.5
B198	B198-5	1/26/06	5	6	Area 3	UG/KG	<12.5
B198	B198-10	1/26/06	10	11	Area 3	UG/KG	<12.5
B199	B199-2	1/23/06	2	3	Area 3	UG/KG	<12.5
B199	B199-5	1/23/06	5	6	Area 3	UG/KG	3.75
B199	B199-10	1/23/06	10	11	Area 3	UG/KG	<12.5
B200	B200-2	1/24/06	2	3	Area 3	UG/KG	<12.5
B200	B200-5	1/24/06	5	6	Area 3	UG/KG	<12.5
B200	B200-10	1/24/06	10	11	Area 3	UG/KG	<12.5
B201	B201-2	1/25/06	2	3	Area 3	UG/KG	<12.5
B201	B201-5	1/25/06	5	6	Area 3	UG/KG	<12.5
B201	B201-10	1/25/06	10	11	Area 3	UG/KG	<12.5
B202	B202-2	1/25/06	2	3	Area 3	UG/KG	<12.5
B202	B202-5	1/25/06	5	6	Area 3	UG/KG	<12.5
B202	B202-10	1/25/06	10	11	Area 3	UG/KG	<12.5
B203	B203-2	2/7/06	2	3	Area 3	UG/KG	<125
B203	B203-5	2/7/06	5	6	Area 3	UG/KG	<625
B203	B203-10	2/7/06	10	11	Area 3	UG/KG	<62.5
B204	B204-2	2/6/06	2	3	Area 3	UG/KG	<125
B204	B204-5	2/6/06	5	6	Area 3	UG/KG	<125
B204	B204-10	2/6/06	10	11	Area 3	UG/KG	<12.5
B205	B205-2	2/7/06	2	3	Area 3	UG/KG	<625
B205	B205-5	2/7/06	5	6	Area 3	UG/KG	<1250

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B205	B205-10	2/7/06	10	11	Area 3	UG/KG	<12.5
B206	B206-2	2/8/06	2	3	Area 2	UG/KG	<62.5
B206	B206-5	2/8/06	5	6	Area 2	UG/KG	<12.5
B206	B206-10	2/8/06	10	11	Area 2	UG/KG	<12.5
B207	B207-2	2/8/06	2	3	Area 2	UG/KG	58.75
B207	B207-5	2/8/06	5	6	Area 2	UG/KG	<12.5
B207	B207-10	2/8/06	10	11	Area 2	UG/KG	<12.5
B208	B208-2	1/31/06	2	3	Area 2	UG/KG	<12.5
B208	B208-5	1/31/06	5	6	Area 2	UG/KG	<12.5
B208	B208-10	1/31/06	10	11	Area 2	UG/KG	<12.5
B209	B209-2	1/31/06	2	3	Area 2	UG/KG	<125
B209	B209-5	1/31/06	5	6	Area 2	UG/KG	<125
B209	B209-10	1/31/06	10	11	Area 2	UG/KG	<125
B210	B210-2	1/31/06	2	3	Area 3	UG/KG	<62.5
B210	B210-5	1/31/06	5	6	Area 3	UG/KG	<12.5
B210	B210-10	1/31/06	10	11	Area 3	UG/KG	<12.5
B211	B211-2	2/6/06	2	3	Area 3	UG/KG	<62.5
B211	B211-5	2/6/06	5	6	Area 3	UG/KG	<125
B211	B211-10	2/6/06	10	11	Area 3	UG/KG	<62.5
B212	B212-2	1/24/06	2	3	Area 3	UG/KG	<12.5
B212	B212-5	1/24/06	5	6	Area 3	UG/KG	<12.5
B212	B212-10	1/24/06	10	11	Area 3	UG/KG	<12.5
B213	B213-2	2/6/06	2	3	Area 3	UG/KG	<12.5
B213	B213-5	2/6/06	5	6	Area 3	UG/KG	<12.5
B213	B213-10	2/6/06	10	11	Area 3	UG/KG	<12.5
B214	B214-2	1/23/06	2	3	Area 3	UG/KG	<12.5
B214	B214-5	1/23/06	5	6	Area 3	UG/KG	<12.5
B214	B214-10	1/23/06	10	11	Area 3	UG/KG	<12.5
B215	B215-2	2/3/06	2	3	Area 3	UG/KG	<62.5
B215	B215-5	2/3/06	5	6	Area 3	UG/KG	<12.5
B215	B215-10	2/3/06	10	11	Area 3	UG/KG	<12.5
B216	B216-2	2/2/06	2	3	Area 3	UG/KG	<12.5
B216	B216-5	2/2/06	5	6	Area 3	UG/KG	<12.5
B216	B216-10	2/2/06	10	11	Area 3	UG/KG	<12.5
B217	B217-2	1/24/06	2	3	Area 3	UG/KG	<12.5
B217	B217-5	1/24/06	5	6	Area 3	UG/KG	<12.5
B217	B217-10	1/24/06	10	11	Area 3	UG/KG	<12.5
B218	B218-2	2/8/06	2	3	Area 3	UG/KG	<125
B218	B218-5	2/8/06	5	6	Area 3	UG/KG	<125
B218	B218-10	2/8/06	10	11	Area 3	UG/KG	<12.5
B219	B219-2	1/26/06	2	3	Area 3	UG/KG	<12.5
B219	B219-5	1/26/06	5	6	Area 3	UG/KG	<12.5
B219	B219-10	1/26/06	10	11	Area 3	UG/KG	<12.5
B220	B220-2	1/26/06	2	3	Area 3	UG/KG	<12.5
B220	B220-5	1/26/06	5	6	Area 3	UG/KG	<12.5
B220	B220-10	1/26/06	10	11	Area 3	UG/KG	<12.5
B221	B221-2	1/27/06	2	3	Area 2	UG/KG	<12.5
B221	B221-5	1/27/06	5	6	Area 2	UG/KG	<12.5
B221	B221-10	1/27/06	10	11	Area 2	UG/KG	<12.5
B222	B222-2	2/3/06	2	3	Area 2	UG/KG	<12.5
B222	B222-5	2/3/06	5	6	Area 2	UG/KG	<12.5
B222	B222-10	2/3/06	10	11	Area 2	UG/KG	<12.5
B223	B223-2	2/3/06	2	3	Area 2	UG/KG	<12.5
B223	B223-5	2/3/06	5	6	Area 2	UG/KG	<12.5

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B223	B223-10	2/3/06	10	11	Area 2	UG/KG	<12.5
B224	B224-05	1/21/08	5	6	Area 1	UG/KG	<2300
B224	B224-10	1/21/08	10	11	Area 1	UG/KG	<21
B225	B225-5	1/21/08	5	6	Area 1	UG/KG	<22
B225	B225-10	1/21/08	9	10	Area 1	UG/KG	<23
B226	B226-5	1/18/08	5	6	Area 1	UG/KG	<220
B226	B226-10	1/18/08	9	10	Area 1	UG/KG	<230
B227	B227-5	1/21/08	5	6	Area 1	UG/KG	<230
B227	B227-10	1/21/08	10	11	Area 1	UG/KG	<2200
B228	B228-05	1/18/08	5	6	Area 1	UG/KG	<12000
B228	B228-10	1/18/08	10	11	Area 1	UG/KG	<420
B229	B229-05	1/18/08	5	6	Area 1	UG/KG	<110
B229	B229-10	1/18/08	10	11	Area 1	UG/KG	<11000
B230	B230-5	1/17/08	5	6	Area 1	UG/KG	<220
B230	B230-10	1/17/08	9	10	Area 1	UG/KG	<2300
B231	B231-5	1/17/08	5	6	Area 1	UG/KG	<22
B231	B231-10	1/17/08	9	10	Area 1	UG/KG	<22
B232	B232-05	1/21/08	5	6	Area 3	UG/KG	<240
B232	B232-10	1/21/08	10	11	Area 3	UG/KG	<24
B233	B233-05	1/23/08	5	6	Area 4	UG/KG	<20
B233	B233-10	1/23/08	10	11	Area 4	UG/KG	<20
B234	B234-05	1/23/08	5	6	Area 4	UG/KG	<20
B234	B234-10	1/23/08	10	11	Area 4	UG/KG	<20
B235	B235-5	1/25/08	5	6	Area 4	UG/KG	<23
B235	B235-10	1/25/08	9	10	Area 4	UG/KG	<220
B236	B236-05	1/22/08	5	6	Area 3	UG/KG	<230
B236	B236-10	1/22/08	10	11	Area 3	UG/KG	<24
B237	B237-5	1/23/08	5	6	Area 3	UG/KG	<12000
B237	B237-10	1/23/08	10	11	Area 3	UG/KG	<11000
B238	B238-5	1/25/08	5	6	Area 3	UG/KG	<1100
B238	B238-10	1/25/08	10	11	Area 3	UG/KG	<11000
B239	B239-05	1/22/08	5	6	Area 3	UG/KG	<230
B239	B239-10	1/22/08	10	11	Area 3	UG/KG	<24
B240	B240-5	1/22/08	5	6	Area 3	UG/KG	<23
B240	B240-10	1/22/08	9	10	Area 3	UG/KG	<23
B241	B241-5	1/23/08	5	6	Area 3	UG/KG	<230
B241	B241-10	1/23/08	10	11	Area 3	UG/KG	<230
B242	B242-05	1/25/08	5	6	Area 3	UG/KG	<1200
B242	B242-10	1/25/08	10	11	Area 3	UG/KG	<23
B243	B243-05	1/25/08	5	6	Area 3	UG/KG	<23
B243	B243-10	1/25/08	10	11	Area 3	UG/KG	<3100
B244	B244-05	1/17/08	5	6	Area 1	UG/KG	<23
B244	B244-10	1/17/08	10	11	Area 1	UG/KG	<24
B245	B245-05	1/15/08	5	6	Area 1	UG/KG	<23
B245	B245-10	1/15/08	10	11	Area 1	UG/KG	<24
B246	B246-5	1/15/08	5	6	Area 1	UG/KG	<23
B246	B246-10	1/15/08	10	11	Area 1	UG/KG	<24
B247	B247-05	1/17/08	5	6	Area 1	UG/KG	<230
B247	B247-10	1/17/08	10	11	Area 1	UG/KG	<23
B248	B248-05	1/15/08	5	6	Area 1	UG/KG	<23
B248	B248-10	1/15/08	10	11	Area 1	UG/KG	<23
B249	B249-05	1/14/08	5	6	Area 1	UG/KG	<11000
B249	B249-10	1/14/08	10	11	Area 1	UG/KG	<2400
B250	B250-05	1/16/08	5	6	Area 1	UG/KG	<23

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B250	B250-10	1/16/08	10	11	Area 1	UG/KG	<24
B251	B251-05	1/16/08	5	6	Area 1	UG/KG	<23
B251	B251-10	1/16/08	10	11	Area 1	UG/KG	<23
B252	B252-5	1/15/08	5	6	Area 1	UG/KG	<22
B252	B252-10	1/15/08	10	11	Area 1	UG/KG	<22
B253	B253-05	1/31/08	5	6	Area 4	UG/KG	<2300
B253	B253-10	1/31/08	10	11	Area 4	UG/KG	<2200
B254	B254-05	2/5/08	5	6	Area 4	UG/KG	<23
B254	B254-10	2/5/08	10	11	Area 4	UG/KG	<22
B255	B255-05	1/31/08	5	6	Area 3	UG/KG	<23
B255	B255-10	1/31/08	10	11	Area 3	UG/KG	<24
B256	B256-05	1/31/08	5	6	Area 3	UG/KG	<23
B256	B256-10	1/31/08	10	11	Area 3	UG/KG	<23
B257	B257-05	1/30/08	5	6	Area 3	UG/KG	<440
B257	B257-10	1/30/08	10	11	Area 3	UG/KG	<460
B258	B258-05	1/31/08	5	6	Area 3	UG/KG	<1100
B258	B258-10	1/31/08	10	11	Area 3	UG/KG	<11000
B259	B259-05	2/1/08	5	6	Area 3	UG/KG	<240
B259	B259-10	2/1/08	10	11	Area 3	UG/KG	<23
B260	B260-05	2/1/08	5	6	Area 3	UG/KG	<220
B260	B260-10	2/1/08	10	11	Area 3	UG/KG	<24
B261	B261-5	1/21/09	4.5	5.5	Area 3	UG/KG	<23
B261	B261-10	1/21/09	9.5	10.5	Area 3	UG/KG	<230
B262	B262-05	1/29/08	5	6	Area 3	UG/KG	<23
B262	B262-10	1/29/08	10	11	Area 3	UG/KG	<22
B263	B263-05	2/4/08	5	6	Area 3	UG/KG	<230
B263	B263-10	2/4/08	10	11	Area 3	UG/KG	<22
B264	B264-5	1/15/08	5	6	Area 1	UG/KG	<23
B264	B264-10	1/15/08	10	11	Area 1	UG/KG	<22
B266	B266-05	1/14/08	5	6	Area 1	UG/KG	<22
B266	B266-10	1/14/08	10	11	Area 1	UG/KG	<27
B267	B267-05	1/15/08	5	6	Area 1	UG/KG	<23
B267	B267-10	1/15/08	10	11	Area 1	UG/KG	<24
B268	B268-05	2/1/08	5	6	Area 1	UG/KG	<23
B268	B268-10	2/1/08	10	11	Area 1	UG/KG	<23
B270	B270-5	1/20/09	4.5	5.5	Area 3	UG/KG	<23
B270	B270-10	1/20/09	10	11	Area 3	UG/KG	<24
B271	B271-5	1/14/08	5	6	Area 1	UG/KG	<23
B271	B271-10	1/14/08	10	11	Area 1	UG/KG	<23
B272	B272-5	1/14/08	5	6	Area 1	UG/KG	<24
B272	B272-10	1/14/08	10	11	Area 1	UG/KG	<23
B274	B274-05	1/14/08	5	6	Area 1	UG/KG	<23
B274	B274-10	1/14/08	10	11	Area 1	UG/KG	<22
B275	B275-5	1/14/08	5	6	Area 1	UG/KG	<23
B275	B275-10	1/14/08	10	11	Area 1	UG/KG	<21
B276	B276-05	2/4/08	5	6	Area 3	UG/KG	<23
B276	B276-10	2/4/08	10	11	Area 3	UG/KG	<25
B277	B277-5	1/16/08	5	6	Area 3	UG/KG	<20
B277	B277-10	1/16/08	10	11	Area 3	UG/KG	<20
B278	B278-5	1/16/08	5	6	Area 1	UG/KG	<2000
B278	B278-10	1/16/08	10	11	Area 1	UG/KG	<200
B279	B279-5	1/16/08	5	6	Area 1	UG/KG	<200
B279	B279-10	1/16/08	10	11	Area 1	UG/KG	<200
B280	B280-5	1/16/08	5	6	Area 1	UG/KG	<200

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B280	B280-10	1/16/08	10	11	Area 1	UG/KG	<100
B281	B281-5	1/14/08	5	6	Area 1	UG/KG	<24
B281	B281-10	1/14/08	10	11	Area 1	UG/KG	<210
B282	B282-05	1/28/08	5	6	Area 1	UG/KG	<23
B282	B282-10	1/28/08	10	11	Area 1	UG/KG	<20
B283	B283-05	1/29/08	5	6	Area 1	UG/KG	<23
B283	B283-10	1/29/08	10	11	Area 1	UG/KG	<23
B284	B284-05	1/28/08	5	6	Area 2	UG/KG	<120
B284	B284-10	1/28/08	10	11	Area 2	UG/KG	<23
B285	B285-05	1/28/08	5	6	Area 2	UG/KG	<47
B285	B285-10	1/28/08	10	11	Area 2	UG/KG	<25
B286	B286-5	1/22/09	5	6	Area 2	UG/KG	50
B286	B286-10	1/22/09	10	11	Area 2	UG/KG	<230
B287	B287-5	1/22/08	5	6	Area 2	UG/KG	<240
B287	B287-10	1/22/08	10	11	Area 2	UG/KG	<230
B288	B288-05	1/17/08	5	6	Area 2	UG/KG	<22
B288	B288-10	1/17/08	10	11	Area 2	UG/KG	<21
B289	B289-5	1/28/08	5	6	Area 2	UG/KG	<230
B289	B289-10	1/28/08	10	11	Area 2	UG/KG	<22
B290	B290-5	1/28/08	5	6	Area 2	UG/KG	<250
B290	B290-10	1/28/08	10	11	Area 2	UG/KG	<230
B291	B291-10	1/29/08	10	11	Area 2	UG/KG	<23
B292	B292-5	1/22/09	5	6	Area 2	UG/KG	<23
B292	B292-10	1/22/09	10	11	Area 2	UG/KG	<22
B293	B293-5	1/22/09	5	6	Area 2	UG/KG	<26
B293	B293-10	1/22/09	10	11	Area 2	UG/KG	<25
B294	B294-05	1/31/08	4.5	5	Area 2	UG/KG	<240
B294	B294-10	1/31/08	10	11	Area 2	UG/KG	<260
B295	B295-5	1/22/09	5	6	Area 2	UG/KG	<24
B295	B295-10	1/22/09	10	11	Area 2	UG/KG	<24
B297	B297-5	1/20/09	4.5	5.5	Area 2	UG/KG	570
B297	B297-10	1/20/09	9.5	10.5	Area 2	UG/KG	<22
B298	B298-5	1/28/08	5	6	Area 2	UG/KG	<22
B298	B298-10	1/28/08	10	11	Area 2	UG/KG	<24
B299	B299-5	1/19/09	5	6	Area 4	UG/KG	<23
B299	B299-10	1/19/09	9.5	10.5	Area 4	UG/KG	<2200
B300	B300-05	2/6/08	5	6	Area 4	UG/KG	<23
B300	B300-10	2/6/08	10	11	Area 4	UG/KG	<23
B301	B301-05	2/6/08	5	6	Area 4	UG/KG	<23
B301	B301-10	2/6/08	10	11	Area 4	UG/KG	<23
B302	B302-05	2/5/08	5	6	Area 4	UG/KG	<23
B302	B302-10	2/5/08	10	11	Area 4	UG/KG	<23
B303	B303-05	1/28/08	5	6	Area 4	UG/KG	<220
B303	B303-10	1/28/08	10	11	Area 4	UG/KG	<230
B304	B304-5	1/19/09	4.5	5.5	Area 3	UG/KG	<23
B304	B304-10	1/19/09	9.5	10.5	Area 3	UG/KG	<23
B305	B305-5	1/19/09	4.5	5.5	Area 3	UG/KG	<23
B305	B305-10	1/19/09	9.5	10.5	Area 3	UG/KG	<23
B306	B306-05	1/31/08	5	6	Area 3	UG/KG	<2400
B306	B306-10	1/31/08	10	11	Area 3	UG/KG	<2300
B307	B307-5	1/28/08	5	6	Area 3	UG/KG	<23
B307	B307-10	1/28/08	10	11	Area 3	UG/KG	<22
B308	B308-05	1/30/08	5	6	Area 3	UG/KG	<23
B308	B308-10	1/30/08	10	11	Area 3	UG/KG	<22

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B309	B309-5	1/19/09	4.5	5.5	Area 3	UG/KG	<21
B309	B309-10	1/19/09	9.5	10.5	Area 3	UG/KG	<23
B310	B310-05	2/4/08	5	6	Area 3	UG/KG	<23
B310	B310-10	2/4/08	10	11	Area 3	UG/KG	<23
B311	B311-05	2/5/08	5	6	Area 3	UG/KG	<450
B311	B311-10	2/5/08	10	11	Area 3	UG/KG	<23
B312	B312-05	1/30/08	4.5	5.5	Area 3	UG/KG	<23
B312	B312-10	1/30/08	10	11	Area 3	UG/KG	<22
B313	B313-05	2/1/08	4.5	5.5	Area 3	UG/KG	<23
B313	B313-10	2/1/08	10	11	Area 3	UG/KG	<22
B314	B314-05	1/30/08	5	6	Area 2	UG/KG	<24
B314	B314-10	1/30/08	10	11	Area 2	UG/KG	<24
B315	B315-05	1/30/08	4.5	5.5	Area 3	UG/KG	<230
B315	B315-10	1/30/08	10	11	Area 3	UG/KG	<4900
B316	B316-05	1/30/08	4.5	5.5	Area 3	UG/KG	<230
B316	B316-10	1/30/08	10	11	Area 3	UG/KG	<2200
B317	B317-05	1/29/08	4.5	5.5	Area 3	UG/KG	<22
B317	B317-10	1/29/08	10	11	Area 3	UG/KG	<23
B318	B318-05	1/28/08	4.5	5.5	Area 2	UG/KG	<230
B318	B318-10	1/28/08	10	11	Area 2	UG/KG	<23
B319	B319-5	1/21/09	5	6	Area 2	UG/KG	<22
B319	B319-10	1/21/09	10	11	Area 2	UG/KG	<23
B320	B320-05	1/29/08	4.5	5.5	Area 3	UG/KG	<22
B320	B320-10	1/29/08	10	11	Area 3	UG/KG	<120
B321	B321-05	1/30/08	4.5	5.5	Area 3	UG/KG	<22
B321	B321-10	1/30/08	10	11	Area 3	UG/KG	<22
B322	B322-05	2/1/08	5	6	Area 3	UG/KG	<23
B322	B322-10	2/1/08	10	11	Area 3	UG/KG	<23
B323	B323-05	1/28/08	4.5	5.5	Area 3	UG/KG	<230
B323	B323-10	1/28/08	10	11	Area 3	UG/KG	<230
B324	B324-00	4/8/08	0	0.5	Area 4	UG/KG	<23
B324	B324-02	4/8/08	1.5	2	Area 4	UG/KG	<23
B325	B325-00	4/8/08	0	0.5	Area 4	UG/KG	<22
B325	B325-02	4/8/08	1.5	2	Area 4	UG/KG	<22
B326	B326-00	4/8/08	0	0.5	Area 4	UG/KG	<23
B326	B326-02	4/8/08	1.5	2	Area 4	UG/KG	<23
B-401	LL_B-401-1_100611	10/6/11	0.5	1	Area 2	UG/KG	<3000
B-401	LL_B-401-3_100611	10/6/11	2.5	3	Area 2	UG/KG	<300
B-401	LL_B-401-6_100611	10/6/11	5.5	6	Area 2	UG/KG	<300
B-401	LL_B-401-9_100611	10/6/11	8.5	9	Area 2	UG/KG	<300
B-402	LL_B-402-1_100611	10/6/11	0.5	1	Area 2	UG/KG	<3000
B-402	LL_B-402-3_100611	10/6/11	2.5	3	Area 2	UG/KG	<3000
B-402	LL_B-402-6_100611	10/6/11	5.5	6	Area 2	UG/KG	<300
B-402	LL_B-402-9_100611	10/6/11	8.5	9	Area 2	UG/KG	<300
B-403	LL_B-403-1_100711	10/7/11	0.5	1	Area 2	UG/KG	<300
B-403	LL_B-403-3_100711	10/7/11	2.5	3	Area 2	UG/KG	<300
B-403	LL_B-403-6_100711	10/7/11	5.5	6	Area 2	UG/KG	<300
B-403	LL_B-403-9_100711	10/7/11	8.5	9	Area 2	UG/KG	<300
B-404	LL_B-404-1_100711	10/7/11	0.5	1	Area 2	UG/KG	<300
B-404	LL_B-404-3_100711	10/7/11	2.5	3	Area 2	UG/KG	<300
B-404	LL_B-404-6_100711	10/7/11	5.5	6	Area 2	UG/KG	<300
B-404	LL_B-404-9_100711	10/7/11	8.5	9	Area 2	UG/KG	<300
B-405	LL_B-405-1_100711	10/7/11	0.5	1	Area 2	UG/KG	<300
B-405	LL_B-405-3_100711	10/7/11	2.5	3	Area 2	UG/KG	<300

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B-406	LL_B-406-1_100711	10/7/11	0.5	1	Area 2	UG/KG	<300
B-406	LL_B-406-3_100711	10/7/11	2.5	3	Area 2	UG/KG	<300
B-406	LL_B-406-6_100711	10/7/11	5.5	6	Area 2	UG/KG	<300
B-406	LL_B-406-9_100711	10/7/11	8.5	9	Area 2	UG/KG	<300
B-407	LL_B-407-1_100711	10/7/11	0.5	1	Area 2	UG/KG	<300
B-407	LL_B-407-3_100711	10/7/11	2.5	3	Area 2	UG/KG	<300
B-407	LL_B-407-6_100711	10/7/11	5.5	6	Area 2	UG/KG	<300
B-407	LL_B-407-9_100711	10/7/11	8.5	9	Area 2	UG/KG	<300
B-408	LL_B-408-1_100711	10/7/11	0.5	1	Area 2	UG/KG	<300
B-408	LL_B-408-3_100711	10/7/11	2.5	3	Area 2	UG/KG	<300
B-408	LL_B-408-6_100711	10/7/11	5.5	6	Area 2	UG/KG	<300
B-408	LL_B-408-9_100711	10/7/11	8.5	9	Area 2	UG/KG	<300
B-409	LL_B-409-1_100711	10/7/11	0.5	1	Area 2	UG/KG	<300
B-409	LL_B-409-3_100711	10/7/11	2.5	3	Area 2	UG/KG	<300
B-409	LL_B-409-6_100711	10/7/11	5.5	6	Area 2	UG/KG	<300
B-409	LL_B-409-9_100711	10/7/11	8.5	9	Area 2	UG/KG	<300
B-410	LL_B-410-1_100711	10/7/11	0.5	1	Area 2	UG/KG	<300
B-410	LL_B-410-3_100711	10/7/11	2.5	3	Area 2	UG/KG	<300
B-410	LL_B-410-6_100711	10/7/11	5.5	6	Area 2	UG/KG	<300
B-410	LL_B-410-9_100711	10/7/11	8.5	9	Area 2	UG/KG	<300
B-411	LL_B-411-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<300
B-411	LL_B-411-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<300
B-411	LL_B-411-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<300
B-411	LL_B-411-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<300
B-412	LL_B-412-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<300
B-412	LL_B-412-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<300
B-412	LL_B-412-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<300
B-412	LL_B-412-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<300
B-413	LL_B-413-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<300
B-413	LL_B-413-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<300
B-413	LL_B-413-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<300
B-413	LL_B-413-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<300
B-414	LL_B-414-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<300
B-414	LL_B-414-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<300
B-414	LL_B-414-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<300
B-414	LL_B-414-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<300
B-415	LL_B-415-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<300
B-415	LL_B-415-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<300
B-415	LL_B-415-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<30000
B-415	LL_B-415-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<300
B-416	LL_B-416-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<30000
B-416	LL_B-416-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<300
B-416	LL_B-416-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<300
B-416	LL_B-416-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<300
B-417	LL_B-417-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<300
B-417	LL_B-417-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<300
B-417	LL_B-417-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<300
B-417	LL_B-417-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<300
B-418	LL_B-418-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<300
B-418	LL_B-418-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<300
B-418	LL_B-418-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<30000
B-418	LL_B-418-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<300
B-419	LL_B-419-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<30000
B-419	LL_B-419-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<300

Table B4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
B-419	LL_B-419-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<300
B-419	LL_B-419-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<300
B-420	LL_B-420-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<30000
B-420	LL_B-420-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<300
B-420	LL_B-420-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<300
B-420	LL_B-420-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<300
B-421	LL_B-421-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<300
B-421	LL_B-421-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<300
B-421	LL_B-421-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<300
B-421	LL_B-421-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<300
B-422	LL_B-422-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<300
B-422	LL_B-422-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<300
B-422	LL_B-422-6_100611	10/6/11	5.5	6	Area 3	UG/KG	<300
B-422	LL_B-422-9_100611	10/6/11	8.5	9	Area 3	UG/KG	<300
B-423	LL_B-423-1_100711	10/7/11	0.5	1	Area 3	UG/KG	<300
B-423	LL_B-423-3_100711	10/7/11	2.5	3	Area 3	UG/KG	<300
B-423	LL_B-423-6_100711	10/7/11	5.5	6	Area 3	UG/KG	<300
B-423	LL_B-423-9_100711	10/7/11	8.5	9	Area 3	UG/KG	<300
B-424	LL_B-424-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<300
B-424	LL_B-424-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<300
B-424	LL_B-424-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<300
B-424	LL_B-424-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<300
B-425	LL_B-425-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<30000
B-425	LL_B-425-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<30000
B-425	LL_B-425-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<300
B-425	LL_B-425-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<300
B-426	LL_B-426-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<300
B-426	LL_B-426-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<300
B-426	LL_B-426-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<300
B-426	LL_B-426-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<300
B-427	LL_B-427-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<300
B-427	LL_B-427-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<300
B-427	LL_B-427-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<300
B-427	LL_B-427-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<300
B-428	LL_B-428-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<300
B-428	LL_B-428-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<300
B-428	LL_B-428-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<300
B-428	LL_B-428-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<300
B-429	LL_B-429-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<300
B-429	LL_B-429-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<300
B-429	LL_B-429-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<300
B-429	LL_B-429-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<300
B-430	LL_B-430-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<300
B-430	LL_B-430-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<300
B-430	LL_B-430-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<300
B-430	LL_B-430-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<300
S001	S001-0"	12/4/07	0	0.5	Area 4	UG/KG	<45
S002	S002-0"	12/4/07	0	0.5	Area 4	UG/KG	<210
S003ALT	S003ALT-0"	12/20/07	0	0.5	Area 4	UG/KG	<110
S004	S004-0"	1/4/08	0	0.5	Area 4	UG/KG	620
S004	S004-12"	1/4/08	1	1.5	Area 4	UG/KG	<23
S005	S005-0"	12/18/07	0	0.5	Area 4	UG/KG	<110
S006	S006-0"	12/17/07	0	0.5	Area 4	UG/KG	<110
S006	S006-12"	12/17/07	1	1.5	Area 4	UG/KG	<110

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
S007	S007-0"	12/17/07	0	0.5	Area 4	UG/KG	<110
S008	S008-0"	12/17/07	0	0.5	Area 4	UG/KG	<110
S009	S009-0"	12/17/07	0	0.5	Area 4	UG/KG	<100
S009	S009-12"	12/17/07	1	1.5	Area 4	UG/KG	<110
S010	S010-6''	1/19/09	0.5	1	Area 4	UG/KG	<220
S011	S011-0"	12/17/07	0	0.5	Area 4	UG/KG	<120
S011	S011-12"	12/17/07	1	1.5	Area 4	UG/KG	<2300
S012	S012B-0"	12/18/07	0	0.5	Area 4	UG/KG	<100
S013	S013-0"	1/4/08	0	0.5	Area 4	UG/KG	<220
S014	S014-0"	12/4/07	0	0.5	Area 4	UG/KG	<26
S015	S015-0"	12/4/07	0	0.5	Area 4	UG/KG	<110
S016	S016B-0"	1/2/08	0	0.5	Area 4	UG/KG	<110
S016	S016B-12"	1/2/08	1	1.5	Area 4	UG/KG	<23
S017	S017-0"	12/4/07	0	0.5	Area 4	UG/KG	<24
S018	S018-0"	12/20/07	0	0.5	Area 4	UG/KG	<110
S019	S019-0"	12/18/07	0	0.5	Area 4	UG/KG	<110
S020	S020-0"	12/18/07	0	0.5	Area 4	UG/KG	<110
S020	S020-12"	12/18/07	1	1.5	Area 4	UG/KG	<1100
S021	S021-6''	1/19/09	0.5	1	Area 4	UG/KG	<220
S022	S022-0"	12/17/07	0	0.5	Area 4	UG/KG	<110
S023	S023-0"	12/17/07	0	0.5	Area 3	UG/KG	<110
S024	S024-0"	12/17/07	0	0.5	Area 3	UG/KG	<23
S025	S025-0"	12/18/07	0	0.5	Area 3	UG/KG	<110
S025	S025-12"	12/18/07	1	1.5	Area 3	UG/KG	<110
S026	S026-0"	12/18/07	0	0.5	Area 3	UG/KG	<120
S026	S026-12"	12/18/07	1	1.5	Area 3	UG/KG	<1200
S027	S027-0"	12/20/07	0	0.5	Area 3	UG/KG	<1100
S028	S028-0"	12/4/07	0	0.5	Area 3	UG/KG	<21
S029	S029-0"	12/4/07	0	0.5	Area 3	UG/KG	<110
S029	S029-18"	12/4/07	1.5	2	Area 3	UG/KG	<1100
S030	S030-12"	12/4/07	1	1.5	Area 3	UG/KG	<110
S031	S031-0"	12/4/07	0	0.5	Area 3	UG/KG	<110
S032	S032-0"	12/4/07	0	0.5	Area 3	UG/KG	<110
S033	S033-0"	12/4/07	0	0.5	Area 3	UG/KG	<100
S034	S034-0"	12/4/07	0	0.5	Area 3	UG/KG	<110
S035	S035-0"	12/4/07	0	0.5	Area 3	UG/KG	<110
S036	S036-0"	12/4/07	0	0.5	Area 3	UG/KG	<230
S037	S037-0"	12/4/07	0	0.5	Area 3	UG/KG	<320
S037	S037-20"	12/4/07	1.67	2.167	Area 3	UG/KG	<510
S038	S038-0"	12/20/07	0	0.5	Area 3	UG/KG	<120
S039	S039-0"	1/2/08	0	0.5	Area 3	UG/KG	<110
S039	S039-12"	1/2/08	1	1.5	Area 3	UG/KG	<11000
S040	S040-0"	12/20/07	0	0.5	Area 3	UG/KG	<120
S040	S040-12"	12/20/07	1	1.5	Area 3	UG/KG	<120
S041	S041-0"	1/30/08	0	0.5	Area 3	UG/KG	<250
S042	S042-0"	1/30/08	0	0.5	Area 3	UG/KG	3500
S042	S042-12"	1/30/08	1	1.5	Area 3	UG/KG	<26000
S043	S043-0"	1/30/08	0	0.5	Area 3	UG/KG	<240
S044	S044-0"	12/20/07	0	0.5	Area 3	UG/KG	<140
S045	S045-0"	12/20/07	0	0.5	Area 3	UG/KG	<120
S046	S046-0"	12/20/07	0	0.5	Area 3	UG/KG	<110
S047	S047-6"	1/20/09	0.5	1	Area 3	UG/KG	<2300
S048	S048-0"	1/7/08	0	0.5	Area 3	UG/KG	<230
S049	S049-6"	1/20/09	0.5	1	Area 3	UG/KG	<240

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
S050	S050-0"	12/4/07	0	0.5	Area 3	UG/KG	<45
S051	S051-0"	12/20/07	0	0.5	Area 3	UG/KG	<110
S052	S052-0"	12/20/07	0	0.5	Area 3	UG/KG	<120
S052	S052-12"	12/20/07	1	1.5	Area 3	UG/KG	<120
S053	S053-0"	12/20/07	0	0.5	Area 3	UG/KG	<110
S053	S053-12"	12/20/07	1	1.5	Area 3	UG/KG	<110
S054	S054-0"	1/30/08	0	0.5	Area 3	UG/KG	<240
S055	S055-0"	1/30/08	0	0.5	Area 3	UG/KG	<240
S055	S055-12"	1/30/08	1	1.5	Area 3	UG/KG	<240
S056	S056-0"	1/30/08	0	0.5	Area 3	UG/KG	<220
S056	S056-12"	1/30/08	1	1.5	Area 3	UG/KG	<210
S057	S057-0"	1/30/08	0	0.5	Area 3	UG/KG	<240
S058	S058-0"	2/1/08	0	0.5	Area 3	UG/KG	380
S059	S059-0"	2/1/08	0	0.5	Area 3	UG/KG	<1200
S059	S059-12"	2/1/08	1	1.5	Area 3	UG/KG	450
S060	S060-0"	12/13/07	0	0.5	Area 3	UG/KG	<120
S060	S060-18"	12/13/07	1.5	2	Area 3	UG/KG	<110
S061	S061-0"	12/13/07	0	0.5	Area 3	UG/KG	<110
S063	S063-0"	12/14/07	0	0.5	Area 3	UG/KG	<110
S064	S064-0"	12/14/07	0	0.5	Area 3	UG/KG	<110
S064	S064-18"	12/14/07	1.5	2	Area 3	UG/KG	<22
S065	S065-0"	2/1/08	0	0.5	Area 3	UG/KG	270
S065	S065-12"	2/1/08	1	1.5	Area 3	UG/KG	<23
S066	S066-0"	12/14/07	0	0.5	Area 3	UG/KG	<110
S067	S067-0"	12/14/07	0	0.5	Area 3	UG/KG	<110
S068	S068-0"	12/13/07	0	0.5	Area 3	UG/KG	<120
S069	S069-0"	12/13/07	0	0.5	Area 3	UG/KG	<110
S070	S070-0"	12/13/07	0	0.5	Area 3	UG/KG	<110
S071B	S071B-12"	12/21/07	1	1.5	Area 3	UG/KG	<23
S072	S072-0"	12/4/07	0	0.5	Area 3	UG/KG	<22
S073	S073-0"	12/4/07	0	0.5	Area 3	UG/KG	<110
S074	S074-0"	12/4/07	0	0.5	Area 3	UG/KG	<22
S075	S075-0"	12/4/07	0	0.5	Area 3	UG/KG	<1100
S076	S076-6''	1/22/09	0.5	1	Area 3	UG/KG	<220
S078	S078-0"	2/1/08	0	0.5	Area 3	UG/KG	<220
S078	S078-12"	2/1/08	1	1.5	Area 3	UG/KG	<24
S079	S079-0"	2/1/08	0	0.5	Area 3	UG/KG	<23
S080	S080-0"	2/1/08	0	0.5	Area 3	UG/KG	<220
S081	S081-0"	2/1/08	0	0.5	Area 3	UG/KG	<240
S082	S082-0"	12/13/07	0	0.5	Area 3	UG/KG	<120
S083	S083-0"	12/13/07	0	0.5	Area 3	UG/KG	<110
S083	S083-15"	12/13/07	1.25	1.75	Area 3	UG/KG	<110
S084	S084-0"	12/4/07	0	0.5	Area 3	UG/KG	<22
S085	S085-0"	12/4/07	0	0.5	Area 3	UG/KG	<120
S086	S086-6"	1/20/09	0.5	1	Area 3	UG/KG	<310
S087	S087-0"	12/13/07	0	0.5	Area 3	UG/KG	<110
S088	S088-0"	1/2/08	0	0.5	Area 3	UG/KG	<110
S089	S089-0"	1/2/08	0	0.5	Area 3	UG/KG	<21
S090	S090-0"	12/13/07	0	0.5	Area 3	UG/KG	<110
S090	S090-18"	12/13/07	1.5	2	Area 3	UG/KG	<110
S091	S091-0"	2/1/08	0	0.5	Area 3	UG/KG	<1100
S092	S092-0"	12/13/07	0	0.5	Area 3	UG/KG	<110
S093	S093-0"	12/4/07	0	0.5	Area 3	UG/KG	<100
S094	S094-0"	12/4/07	0	0.5	Area 3	UG/KG	<22

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
S095	S095-0"	12/4/07	0	0.5	Area 3	UG/KG	<22
S096	S096-0"	12/4/07	0	0.5	Area 3	UG/KG	<22
S097	S097-6"	1/20/09	0.5	1	Area 3	UG/KG	<21
S098	S098-0"	12/4/07	0	0.5	Area 3	UG/KG	<21
S099	S099-0"	12/13/07	0	0.5	Area 3	UG/KG	<110
S100	S100-0"	12/13/07	0	0.5	Area 3	UG/KG	<110
S101	S101-0"	12/13/07	0	0.5	Area 3	UG/KG	<110
S102	S102-0"	12/13/07	0	0.5	Area 3	UG/KG	<110
S102	S102-15"	12/13/07	1.25	1.75	Area 3	UG/KG	<110
S103	S103-0"	1/3/08	0	0.5	Area 2	UG/KG	<110
S103	S103-12"	1/3/08	1	1.5	Area 2	UG/KG	<120
S104	S104-0"	1/29/08	0	0.5	Area 2	UG/KG	<24
S105	S105-0"	1/31/08	0	0.5	Area 2	UG/KG	<240
S106	S106-6''	1/22/09	0.5	1	Area 2	UG/KG	<23
S106	S106-12''	1/22/09	1	1.5	Area 2	UG/KG	<23
S107	S107-0"	12/20/07	0	0.5	Area 2	UG/KG	<22
S108	S108-0"	12/20/07	0	0.5	Area 2	UG/KG	<120
S109	S109-0"	1/31/08	0	0.5	Area 2	UG/KG	<210
S109	S109-12"	1/31/08	1	1.5	Area 2	UG/KG	<230
S110	S110-6''	1/22/09	0.5	1	Area 2	UG/KG	<210
S111	S111-0"	12/21/07	0	0.5	Area 2	UG/KG	<110
S111	S111-12"	12/21/07	1	1.5	Area 2	UG/KG	<1100
S112	S112-6''	1/22/09	0.5	1	Area 2	UG/KG	<2300
S113	S113-0"	1/31/08	0	0.5	Area 2	UG/KG	<220
S113	S113-12"	1/31/08	1	1.5	Area 2	UG/KG	<230
S114	S114-0"	1/29/08	0	0.5	Area 2	UG/KG	<220
S115	S115-0"	1/29/08	0	0.5	Area 2	UG/KG	<240
S116	S116-0"	1/29/08	0	0.5	Area 2	UG/KG	<240
S117	S117-0"	1/31/08	0	0.5	Area 2	UG/KG	<25
S117	S117-12"	2/1/08	1	1.5	Area 2	UG/KG	<24
S118	S118-6''	1/22/09	0.5	1	Area 2	UG/KG	<24
S119	S119-0"	1/4/08	0	0.5	Area 2	UG/KG	240
S119	S119-12"	1/4/08	1	1.5	Area 2	UG/KG	<24
S120	S120-0"	1/4/08	0	0.5	Area 2	UG/KG	180
S121	S121-0"	1/4/08	0	0.5	Area 2	UG/KG	<240
S121	S121-12"	1/4/08	1	1.5	Area 2	UG/KG	<1200
S122	S122-0"	1/29/08	0	0.5	Area 1	UG/KG	<21
S123	S123-0"	11/29/07	0	0.5	Area 1	UG/KG	<22
S124	S124-0"	11/29/07	0	0.5	Area 1	UG/KG	<110
S125	S125-0"	1/29/08	0	0.5	Area 1	UG/KG	<230
S126	S126-0"	1/7/08	0	0.5	Area 1	UG/KG	<220
S126	S126-12"	1/7/08	1	1.5	Area 1	UG/KG	<21
S127	S127-0"	2/1/08	0	0.5	Area 3	UG/KG	<1200
S130	S130-0"	1/7/08	0	0.5	Area 3	UG/KG	<220
S130	S130-12"	1/7/08	1	1.5	Area 3	UG/KG	<230
S131	S131-0"	1/7/08	0	0.5	Area 1	UG/KG	<420
S132	S132-0"	1/3/08	0	0.5	Area 1	UG/KG	<23
S133	S133B-0"	11/29/07	0	0.5	Area 1	UG/KG	<1100
S133	S133B-12"	11/29/07	1	1.5	Area 1	UG/KG	<110
S134	S134-0"	1/7/08	0	0.5	Area 1	UG/KG	51
S135	S135-6''	1/19/09	0.5	1	Area 1	UG/KG	<24
S136	S136-0"	11/29/07	0	0.5	Area 1	UG/KG	<2200
S136	S136-24"	11/29/07	2	2.5	Area 1	UG/KG	<1100
S137	S137-0"	11/29/07	0	0.5	Area 1	UG/KG	<110

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
S138	S138-0"	11/29/07	0	0.5	Area 1	UG/KG	<110
S138	S138-18"	11/29/07	1.5	2	Area 1	UG/KG	<23000
S139	S139-12"	11/29/07	1	1.5	Area 1	UG/KG	<110
S139	S139-24"	11/29/07	2	2.5	Area 1	UG/KG	<110
S140	S140-12"	11/29/07	1	1.5	Area 1	UG/KG	<22
S141	S141-0"	1/7/08	0	0.5	Area 3	UG/KG	<240
S141	S141-12"	1/7/08	1	1.5	Area 3	UG/KG	<240
S142	S142-0"	1/7/08	0	0.5	Area 3	UG/KG	<210
S143	S143-0"	1/7/08	0	0.5	Area 3	UG/KG	<220
S144B	S144B-0"	1/31/08	0	0.5	Area 3	UG/KG	<220
S144B	S144B-12"	1/31/08	1	1.5	Area 3	UG/KG	<230
S145	S145-0"	1/7/08	0	0.5	Area 3	UG/KG	<220
S145	S145-12"	1/7/08	1	1.5	Area 3	UG/KG	<230
S146	S146-0"	11/29/07	0	0.5	Area 1	UG/KG	<23
S147	S147-12"	11/29/07	1	1.5	Area 1	UG/KG	<42
S148	S148-0"	11/29/07	0	0.5	Area 1	UG/KG	<110
S149	S149-12"	11/29/07	1	1.5	Area 1	UG/KG	<1100
S150	S150-12"	11/29/07	1	1.5	Area 1	UG/KG	<220
S151	S151-12"	11/29/07	1	1.5	Area 1	UG/KG	<43
S152	S152-0"	11/29/07	0	0.5	Area 1	UG/KG	<110
S153	S153-0"	11/29/07	0	0.5	Area 1	UG/KG	<42
S154	S154-0"	11/29/07	0	0.5	Area 1	UG/KG	<100
S155	S155B-0"	11/29/07	0	0.5	Area 1	UG/KG	<220
S156	S156-0"	1/7/08	0	0.5	Area 3	UG/KG	<220
S157	S157-0"	1/2/08	0	0.5	Area 3	UG/KG	<23
S158	S158-0"	12/17/07	0	0.5	Area 3	UG/KG	<110
S158	S158-12"	12/17/07	1	1.5	Area 3	UG/KG	<130
S159	S159-0"	12/17/07	0	0.5	Area 3	UG/KG	<110
S160	S160-0"	1/7/08	0	0.5	Area 3	UG/KG	<220
S161	S161B-0"	11/29/07	0	0.5	Area 1	UG/KG	<21
S162	S162-12"	11/29/07	1	1.5	Area 1	UG/KG	<120
S162	S162-24"	11/29/07	2	2.5	Area 1	UG/KG	<23
S163	S163-0"	11/29/07	0	0.5	Area 1	UG/KG	<22
S164	S164-0"	11/29/07	0	0.5	Area 1	UG/KG	<210
S165	S165-0"	11/29/07	0	0.5	Area 1	UG/KG	<220
S166	S166-0"	11/29/07	0	0.5	Area 1	UG/KG	<42
S167	S167-0"	11/29/07	0	0.5	Area 1	UG/KG	<21
S168	S168-0"	11/29/07	0	0.5	Area 1	UG/KG	<110
S169	S169-0"	11/29/07	0	0.5	Area 1	UG/KG	<220
S170	S170-0"	1/7/08	0	0.5	Area 3	UG/KG	<230
S171	S171-0"	12/17/07	0	0.5	Area 3	UG/KG	<110
S171	S171-12"	12/17/07	1	1.5	Area 3	UG/KG	<130
S172	S172-0"	12/17/07	0	0.5	Area 3	UG/KG	<110
S173	S173-0"	12/17/07	0	0.5	Area 3	UG/KG	<100
S174	S174-0"	12/14/07	0	0.5	Area 3	UG/KG	<110
S175	S175-0"	1/31/08	0	0.5	Area 3	UG/KG	<220
S175	S175-0"	1/7/08	0	0.5	Area 3	UG/KG	<220
S176	S176-0"	11/28/07	0	0.5	Area 1	UG/KG	<21
S177	S177-0"	11/28/07	0	0.5	Area 1	UG/KG	<110
S178	S178-0"	11/28/07	0	0.5	Area 1	UG/KG	<110
S179	S179-0"	11/28/07	0	0.5	Area 1	UG/KG	<22
S180	S180-0"	11/28/07	0	0.5	Area 1	UG/KG	<21
S181	S181-0"	1/31/08	0	0.5	Area 3	UG/KG	<220
S182	S182-0"	12/14/07	0	0.5	Area 3	UG/KG	<110

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
S183	S183-0"	12/17/07	0	0.5	Area 3	UG/KG	<110
S184	S184-0"	12/14/07	0	0.5	Area 3	UG/KG	<110
S185	S185-6''	1/19/09	0.5	1	Area 3	UG/KG	<210
S186	S186-0"	1/31/08	0	0.5	Area 3	UG/KG	<230
S187	S187-0"	1/4/08	0	0.5	Area 1	UG/KG	<23
S188	S188-0"	11/26/07	0	0.5	Area 1	UG/KG	<21
S189	S189-0"	11/26/07	0	0.5	Area 1	UG/KG	<21
S190	S190-0"	11/26/07	0	0.5	Area 1	UG/KG	<21
S191	S191-0"	11/26/07	0	0.5	Area 1	UG/KG	<100
S192	S192-0"	11/26/07	0	0.5	Area 1	UG/KG	120
S193	S193-0"	11/26/07	0	0.5	Area 1	UG/KG	<22
S194	S194-0"	11/26/07	0	0.5	Area 1	UG/KG	<21
S195	S195-0"	11/26/07	0	0.5	Area 1	UG/KG	<24
S196	S196-0"	11/26/07	0	0.5	Area 1	UG/KG	<23
S196	S196-18"	11/26/07	1.5	2	Area 1	UG/KG	<450
S197	S197-0"	11/26/07	0	0.5	Area 1	UG/KG	<22
S198	S198-0"	11/26/07	0	0.5	Area 1	UG/KG	<21
S199	S199-12"	11/26/07	1	1.5	Area 1	UG/KG	<46
S199	S199-24"	11/26/07	2	2.5	Area 1	UG/KG	<23
S200	S200-0"	11/26/07	0	0.5	Area 1	UG/KG	180
S201	S201-0"	11/26/07	0	0.5	Area 1	UG/KG	300
S201	S201-18"	11/26/07	1.5	2	Area 1	UG/KG	<220
S202	S202-0"	11/28/07	0	0.5	Area 1	UG/KG	<22
S203	S203-0"	11/28/07	0	0.5	Area 1	UG/KG	<22
S204	S204-0"	11/28/07	0	0.5	Area 1	UG/KG	<22
S205	S205-0"	11/28/07	0	0.5	Area 1	UG/KG	<21
S206	S206-0"	11/28/07	0	0.5	Area 1	UG/KG	<100
S207	S207-0"	11/28/07	0	0.5	Area 1	UG/KG	<100
S208	S208-0"	11/26/07	0	0.5	Area 1	UG/KG	530
S209	S209-0"	11/26/07	0	0.5	Area 1	UG/KG	360
S210	S210-0"	11/26/07	0	0.5	Area 1	UG/KG	320
S211	S211-0"	11/26/07	0	0.5	Area 1	UG/KG	<22
S212	S212-0"	11/26/07	0	0.5	Area 1	UG/KG	54
S213	S213-0"	11/28/07	0	0.5	Area 1	UG/KG	<110
S214	S214-0"	11/28/07	0	0.5	Area 1	UG/KG	<110
S215	S215-0"	11/28/07	0	0.5	Area 1	UG/KG	<1100
S216	S216-0"	11/28/07	0	0.5	Area 1	UG/KG	<21
S217	S217-0"	11/28/07	0	0.5	Area 1	UG/KG	<21
S218	S218-0"	11/28/07	0	0.5	Area 1	UG/KG	<20
S219	S219-0"	11/28/07	0	0.5	Area 1	UG/KG	<100
S220	S220-0"	11/28/07	0	0.5	Area 1	UG/KG	<21
S221	S221-0"	11/28/07	0	0.5	Area 1	UG/KG	<22
S222	S222-0"	11/28/07	0	0.5	Area 1	UG/KG	<21
S223	S223-0"	11/28/07	0	0.5	Area 1	UG/KG	<110
S224	S224-0"	11/28/07	0	0.5	Area 1	UG/KG	180
S225	S225-0"	11/28/07	0	0.5	Area 1	UG/KG	<22
S226	S226-0"	11/28/07	0	0.5	Area 1	UG/KG	<43
S227	S227-0"	11/29/07	0	0.5	Area 1	UG/KG	<22
S228	S228-0"	11/28/07	0	0.5	Area 1	UG/KG	<110
S229	S229-0"	11/28/07	0	0.5	Area 1	UG/KG	<100
S230	S230-0"	11/28/07	0	0.5	Area 1	UG/KG	<21
S230	S230-12"	11/28/07	1	1.5	Area 1	UG/KG	<21
S231	S231-0"	11/28/07	0	0.5	Area 1	UG/KG	<100
S232	S232-0"	11/28/07	0	0.5	Area 1	UG/KG	<100

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
S233	S233-0"	11/28/07	0	0.5	Area 1	UG/KG	<110
S234	S234-0"	11/28/07	0	0.5	Area 1	UG/KG	<21
S235	S235-0"	11/28/07	0	0.5	Area 1	UG/KG	<21
S236	S236-0"	11/28/07	0	0.5	Area 1	UG/KG	<100
S237	S237-0"	11/29/07	0	0.5	Area 1	UG/KG	<22
S238	S238-0"	1/28/08	0	0.5	Area 2	UG/KG	<240
S239	S239-0"	1/28/08	0	0.5	Area 2	UG/KG	<24
S239	S239-12"	1/30/08	1	1.5	Area 2	UG/KG	<240
S240	S240-6"	1/20/09	0.5	1	Area 2	UG/KG	<440
S241	S241-6"	1/20/09	0.5	1	Area 2	UG/KG	<220
S242	S242-0"	1/29/08	0	0.5	Area 2	UG/KG	<230
S243	S243-0"	1/29/08	0	0.5	Area 2	UG/KG	<21
S244	S244-0"	1/28/08	0	0.5	Area 2	UG/KG	<47
S245	S245-0"	1/28/08	0	0.5	Area 2	UG/KG	<22
S246	S246-0"	1/29/08	0	0.5	Area 2	UG/KG	<230
S247	S247-0"	1/29/08	0	0.5	Area 2	UG/KG	<230
S248	S248-0"	1/28/08	0	0.5	Area 2	UG/KG	<230
S249	S249-0"	1/28/08	0	0.5	Area 2	UG/KG	<120
S250	S250-0"	1/28/08	0	0.5	Area 2	UG/KG	<22
S250	S250-12"	1/30/08	1	1.5	Area 2	UG/KG	<22
S251	S251-0"	1/28/08	0	0.5	Area 2	UG/KG	<24
S251	S251-6"	1/20/09	0.5	1	Area 2	UG/KG	<24
S252	S252-0"	1/29/08	0	0.5	Area 2	UG/KG	<240
S253	S253-0"	1/29/08	0	0.5	Area 2	UG/KG	<230
S254	S254-0"	1/29/08	0	0.5	Area 2	UG/KG	<230
S254	S254-12"	1/30/08	1	1.5	Area 2	UG/KG	<230
S255	S255-0"	1/29/08	0	0.5	Area 2	UG/KG	<27
S256	S256-0"	1/31/08	0	0.5	Area 2	UG/KG	<230
S257	S257-0"	1/3/08	0	0.5	Area 2	UG/KG	<24
S258	S258-0"	1/3/08	0	0.5	Area 2	UG/KG	<120
S259	S259-0"	1/31/08	0	0.5	Area 2	UG/KG	<230
S260	S260-0"	1/3/08	0	0.5	Area 2	UG/KG	<21
S261	S261-0"	12/21/07	0	0.5	Area 3	UG/KG	<100
S262	S262-0"	12/13/07	0	0.5	Area 3	UG/KG	<110
S263	S263-0"	2/1/08	0	0.5	Area 3	UG/KG	<120
S264	S264-0"	1/3/08	0	0.5	Area 3	UG/KG	<110
S264	S264-12"	1/3/08	1	1.5	Area 3	UG/KG	<120
S265	S265-6"	1/20/09	0.5	1	Area 3	UG/KG	<47
S266	S266-0"	12/14/07	0	0.5	Area 3	UG/KG	<24
S267	S267-0"	1/4/08	0	0.5	Area 3	UG/KG	330
S268	S268-0"	1/2/08	0	0.5	Area 3	UG/KG	<120
S268	S268-12"	1/2/08	1	1.5	Area 3	UG/KG	<120
S269	S269-0"	12/4/07	0	0.5	Area 3	UG/KG	<44
S270	S270-0"	12/17/07	0	0.5	Area 4	UG/KG	<110
S271	S271-0"	1/4/08	0	0.5	Area 1	UG/KG	500
S272	S272-0"	11/28/07	0	0.5	Area 1	UG/KG	<21
S273	S273-0"	11/28/07	0	0.5	Area 1	UG/KG	<21
S274	S274-0"	11/29/07	0	0.5	Area 1	UG/KG	<110
S274	S274-12"	11/29/07	1	1.5	Area 1	UG/KG	<23
S275	S275-0"	11/29/07	0	0.5	Area 3	UG/KG	<230
S275	S275-12"	11/29/07	1	1.5	Area 3	UG/KG	<23
S276	S276-0"	11/29/07	0	0.5	Area 1	UG/KG	<110
S277	S277-0"	1/31/08	0	0.5	Area 2	UG/KG	<260
S278	S278-0"	1/31/08	0	0.5	Area 2	UG/KG	<24

Table A4
Results of Dibenzo(a,h)anthracene Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Dibenzo(a,h)anthracene
S279	S279-0"	12/20/07	0	0.5	Area 2	UG/KG	<24
S279	S279-12"	12/20/07	1	1.5	Area 2	UG/KG	<23
S280	S280-0"	1/3/08	0	0.5	Area 2	UG/KG	<110
S281	S281-0"	2/1/08	0	0.5	Area 2	UG/KG	<230
S282	S282-6"	1/20/09	0.5	1	Area 2	UG/KG	<220
S282	S282-12"	1/20/09	1	1.5	Area 2	UG/KG	<210
S283	S283-0"	1/29/08	0	0.5	Area 2	UG/KG	<230
S284	S284-0"	1/29/08	0	0.5	Area 2	UG/KG	<210
S284	S284-12"	1/30/08	1	1.5	Area 2	UG/KG	<220
S285	S285-0"	11/28/07	0	0.5	Area 1	UG/KG	<110
S286	S286-0"	11/26/07	0	0.5	Area 1	UG/KG	<220
S287	S287-0"	11/26/07	0	0.5	Area 1	UG/KG	<220
S287	S287-12"	11/26/07	1	1.5	Area 1	UG/KG	<220
S288	S288-0"	11/26/07	0	0.5	Area 1	UG/KG	<110
S289	S289-0"	11/26/07	0	0.5	Area 1	UG/KG	<22
S290	S290-0"	11/26/07	0	0.5	Area 1	UG/KG	<21
S291	S291-0"	1/7/08	0	0.5	Area 4	UG/KG	<230
S292	S292-6''	1/19/09	0.5	1	Area 1	UG/KG	<2200
S293	S293-0"	11/26/07	0	0.5	Area 1	UG/KG	<220
S293	S293-24"	11/26/07	2	2.5	Area 1	UG/KG	<22
S294	S294-0"	11/26/07	0	0.5	Area 1	UG/KG	<110
S295	S295-6"	11/26/07	0.5	1	Area 1	UG/KG	<110
S296	S296-0"	11/28/07	0	0.5	Area 1	UG/KG	<23
S296	S296-18"	11/28/07	1.5	2	Area 1	UG/KG	<120
S297	S297-6"	1/20/09	0.5	1	Area 3	UG/KG	<26
S297	S297-12"	1/20/09	1	1.5	Area 3	UG/KG	<26
S298	S298-0	12/4/07	0	0.5	Area 4	UG/KG	<22000
VE1	LL_VE1_10_052611_01	5/26/11	9.5	10	Area 3	UG/KG	<300

Notes
UG/KG micrograms per kilogram

Table A5
Results of Lead Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Lead
B005	B005-2	12/8/05	2	3	Area 1	MG/KG	20.5
B005	B005-5	12/8/05	5	6	Area 1	MG/KG	13.75
B007	B007-2	12/12/05	2	3	Area 1	MG/KG	11.7375
B008	B008-2	12/8/05	2	3	Area 1	MG/KG	13.5
B008	B008-5	12/8/05	5	6	Area 1	MG/KG	12.75
B009	B009-2	12/9/05	2	3	Area 1	MG/KG	8.1375
B010	B010-2	12/9/05	2	3	Area 4	MG/KG	10.7875
B010	B010-5	12/9/05	5	6	Area 4	MG/KG	11.4875
B011	B011-2	1/9/06	2	3	Area 1	MG/KG	54.125
B011	B011-5	1/9/06	5	6	Area 1	MG/KG	9.2125
B014	B014-2	12/13/05	2	3	Area 1	MG/KG	52.125
B014	B014-5	12/13/05	5	6	Area 1	MG/KG	14.875
B015	B015-2	12/12/05	2	3	Area 1	MG/KG	26.25
B016	B016-2	12/13/05	2	3	Area 1	MG/KG	8.95
B017	B017-2	12/29/05	2	3	Area 1	MG/KG	7.5375
B018	B018-2	12/29/05	2	3	Area 1	MG/KG	15
B018	B018-5	12/29/05	5	6	Area 1	MG/KG	11.8875
B019	B019-2	12/28/05	2	3	Area 1	MG/KG	10.8625
B020	B020-2	12/12/05	2	3	Area 1	MG/KG	24.25
B021	B021-2	12/28/05	2	3	Area 4	MG/KG	15
B021	B021-5	12/28/05	5	6	Area 4	MG/KG	17.875
B022	B022-2	12/28/05	2	3	Area 3	MG/KG	27
B023	B023-2	12/28/05	2	3	Area 1	MG/KG	62.125
B024	B024-2	12/16/05	2	2.5	Area 1	MG/KG	10.35
B025	B025-2	12/15/05	2	3	Area 1	MG/KG	11.8875
B026	B026-2	12/15/05	2	3	Area 1	MG/KG	95.25
B027	B027-2	12/14/05	2	3	Area 1	MG/KG	69
B028	B028-2	12/13/05	2	3	Area 1	MG/KG	66.75
B028	B028-5	12/13/05	5	6	Area 1	MG/KG	11.2875
B034	B034-2	12/14/05	2	3	Area 1	MG/KG	11.5875
B035	B035-2	12/14/05	2	3	Area 1	MG/KG	79.375
B036	B036-2	12/14/05	2	3	Area 1	MG/KG	12.875
B036	B036-5	12/14/05	5	6	Area 1	MG/KG	9.8375
B036	B036-10	12/14/05	10	11	Area 1	MG/KG	6.475
B037	B037-2	12/19/05	2	3	Area 1	MG/KG	14.75
B038	B038-2	12/19/05	2	3	Area 1	MG/KG	18.875
B039	B039-2	12/16/05	2	3	Area 1	MG/KG	10.6
B039	B039-5	12/16/05	5	6	Area 1	MG/KG	11.6875
B040	B040-2	12/19/05	2	3	Area 1	MG/KG	15.25
B041	B041-2	12/28/05	2	3	Area 3	MG/KG	12.2625
B042	B042-2	12/20/05	2	3	Area 3	MG/KG	25.25
B042	B042-5	12/20/05	5	6	Area 3	MG/KG	16.875
B043	B043-2	12/16/05	2	3	Area 1	MG/KG	76
B044	B044-2	12/16/05	2	3	Area 1	MG/KG	8.3125
B045	B045-2	12/15/05	2	3	Area 1	MG/KG	9.875
B046	B046-2	12/15/05	2	3	Area 1	MG/KG	160
B047	B047-2	12/15/05	2	3	Area 1	MG/KG	10.6125
B048	B048-2	12/20/05	2	3	Area 1	MG/KG	13.375
B048	B048-5	12/20/05	5	6	Area 1	MG/KG	15.125

Table A5
Results of Lead Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Lead
B049	B049-2	12/14/05	2	3	Area 1	MG/KG	13.25
B050	B050-2	12/13/05	2	3	Area 1	MG/KG	34.625
B055	B055-2	12/21/05	2	3	Area 1	MG/KG	5.0875
B056	B056-2	12/14/05	2	3	Area 1	MG/KG	6.925
B057	B057-2	12/13/05	2	3	Area 1	MG/KG	172.5
B058	B058-2	12/20/05	2	3	Area 1	MG/KG	11.825
B059	B059-2	12/20/05	2	3	Area 1	MG/KG	12.875
B060	B060-2	12/20/05	2	3	Area 1	MG/KG	13
B061	B061-2	12/20/05	2	3	Area 1	MG/KG	11.25
B062	B062-2	12/21/05	2	3	Area 1	MG/KG	12.1875
B063	B063-2	1/9/06	2	3	Area 3	MG/KG	90.625
B066	B066-2	1/12/06	2	3	Area 1	MG/KG	8.0875
B066	B066-5	1/12/06	5	6	Area 1	MG/KG	5.9
B067	B067-2	12/21/05	2	3	Area 1	MG/KG	7.4125
B067	B067-5	12/21/05	5	6	Area 1	MG/KG	15.625
B070	B070-2	12/22/05	2	3	Area 1	MG/KG	27.375
B070	B070-5	12/22/05	5	6	Area 1	MG/KG	9.8125
B078	B078-2	12/23/05	2	3	Area 2	MG/KG	7.3125
B079	B079-2	12/23/05	2	3	Area 2	MG/KG	23.25
B080	B080-2	12/22/05	2	3	Area 1	MG/KG	36.875
B081	B081-2	12/22/05	2	3	Area 1	MG/KG	32.875
B084	B084-2	1/5/06	2	3	Area 2	MG/KG	35.25
B085	B085-2	12/28/05	2	3	Area 2	MG/KG	11.2
B088	B088-2	1/18/06	2	3	Area 2	MG/KG	9.725
B088	B088-5	1/18/06	5	6	Area 2	MG/KG	14.5
B089	B089-2	1/9/06	2	3	Area 2	MG/KG	14.375
B090	B090-2	1/10/06	2	3	Area 2	MG/KG	9.7
B090	B090-5	1/10/06	5	6	Area 2	MG/KG	9.4625
B092	B092-2	1/5/06	2	3	Area 2	MG/KG	24.25
B093	B093-2	1/5/06	2	3	Area 2	MG/KG	15.875
B099	B099-2	1/3/06	2	3	Area 2	MG/KG	59.875
B099	B099-5	1/3/06	5	6	Area 2	MG/KG	11.2875
B101	B101-2	1/10/06	2	3	Area 2	MG/KG	10.2375
B103	B103-2	1/6/06	2	3	Area 2	MG/KG	9.3
B104	B104-2	2/3/06	2	3	Area 2	MG/KG	10.8
B104	B104-5	2/3/06	5	6	Area 2	MG/KG	10.875
B105	B105-2	1/10/06	2	3	Area 2	MG/KG	11.9625
B105	B105-5	1/10/06	5	6	Area 2	MG/KG	10.7875
B108	B108-2	1/9/06	2	3	Area 2	MG/KG	12.625
B108	B108-5	1/9/06	5	6	Area 2	MG/KG	18.875
B108	B108-10	1/9/06	10	11	Area 2	MG/KG	4.3625
B115	B115-2	1/3/06	2	3	Area 2	MG/KG	55.125
B117	B117-2	1/6/06	2	3	Area 2	MG/KG	12.625
B117	B117-5	1/6/06	5	6	Area 2	MG/KG	11.4625
B118	B118-2	1/6/06	2	3	Area 2	MG/KG	14.375
B118	B118-5	1/6/06	5	6	Area 2	MG/KG	14
B119	B119-2	1/27/06	2	3	Area 2	MG/KG	11.1
B120	B120-2	1/30/06	2	3	Area 4	MG/KG	10.375
B120	B120-5	1/30/06	5	6	Area 4	MG/KG	10.625

Table A5
Results of Lead Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Lead
B121	B121-2	2/1/06	2	3	Area 4	MG/KG	11.5875
B123	B123-2	1/20/06	2	3	Area 4	MG/KG	1975
B123	B123-5	1/20/06	5	6	Area 4	MG/KG	19
B124	B124-2	1/16/06	2	3	Area 4	MG/KG	9.4125
B124	B124-5	1/16/06	5	6	Area 4	MG/KG	10.3125
B126	B126-2	1/20/06	2	3	Area 4	MG/KG	22.625
B126	B126-5	1/20/06	5	6	Area 4	MG/KG	12.75
B127	B127-2	1/18/06	2	3	Area 4	MG/KG	11.55
B127	B127-5	1/18/06	5	6	Area 4	MG/KG	10.7375
B128	B128-2	2/1/06	2	3	Area 4	MG/KG	9.1875
B128	B128-5	2/1/06	5	6	Area 4	MG/KG	32.25
B129	B129-2	1/18/06	2	3	Area 4	MG/KG	19.625
B129	B129-5	1/18/06	5	6	Area 4	MG/KG	16.5
B132	B132-2	1/19/06	2	3	Area 4	MG/KG	11.55
B132	B132-5	1/19/06	5	6	Area 4	MG/KG	11.9125
B134	B134-2	1/23/06	2	3	Area 4	MG/KG	14.375
B134	B134-5	1/23/06	5	6	Area 4	MG/KG	8.8625
B139	B139-2	1/13/06	2	3	Area 4	MG/KG	9.5125
B140	B140-2	1/31/06	2	3	Area 4	MG/KG	61.125
B142	B142-2	1/31/06	2	3	Area 3	MG/KG	8.0875
B142	B142-5	1/31/06	5	6	Area 3	MG/KG	257.5
B142	B142-10	1/31/06	10	11	Area 3	MG/KG	10.4875
B144	B144-2	1/13/06	2	3	Area 3	MG/KG	8.875
B144	B144-5	1/13/06	5	6	Area 3	MG/KG	8.6125
B145	B145-2	1/19/06	2	3	Area 3	MG/KG	7.875
B145	B145-5	1/19/06	5	6	Area 3	MG/KG	8.0375
B146	B146-2	1/27/06	2	3	Area 3	MG/KG	6.825
B146	B146-5	1/27/06	5	6	Area 3	MG/KG	8.9
B147	B147-2	2/1/06	2	3	Area 3	MG/KG	11.4875
B148	B148-2	1/23/06	2	3	Area 3	MG/KG	17.125
B148	B148-5	1/23/06	5	6	Area 3	MG/KG	128.75
B149	B149-2	1/23/06	2	3	Area 3	MG/KG	3587.5
B149	B149-5	1/23/06	5	6	Area 3	MG/KG	753.75
B149	B149-10	1/23/06	10	11	Area 3	MG/KG	24.25
B150	B150-2	1/20/06	2	3	Area 3	MG/KG	435
B150	B150-5	1/20/06	5	6	Area 3	MG/KG	10.5125
B151	B151-2	1/19/06	2	3	Area 4	MG/KG	16.875
B151	B151-5	1/19/06	5	6	Area 4	MG/KG	308.75
B151	B151-10	1/19/06	10	11	Area 4	MG/KG	9.425
B153	B153-2	1/20/06	2	3	Area 3	MG/KG	12.75
B153	B153-5	1/20/06	5	6	Area 3	MG/KG	176.25
B156	B156-2	1/13/06	2	3	Area 3	MG/KG	71.25
B158	B158-2	1/30/06	2	3	Area 3	MG/KG	9.75
B159	B159-2	1/31/06	2	3	Area 3	MG/KG	9.7
B159	B159-5	1/31/06	5	6	Area 3	MG/KG	13.375
B160	B160-2	1/31/06	2	3	Area 3	MG/KG	11.5375
B162	B162-2	1/16/06	2	3	Area 3	MG/KG	63.75
B163	B163-2	1/16/06	2	3	Area 3	MG/KG	9.1875
B163	B163-5	1/16/06	5	6	Area 3	MG/KG	10.1125

Table A5
Results of Lead Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Lead
B164	B164-2	1/16/06	2	3	Area 3	MG/KG	10.8125
B165	B165-2	1/23/06	2	3	Area 3	MG/KG	9.3875
B166	B166-2	1/24/06	2	3	Area 3	MG/KG	8.8
B166	B166-5	1/24/06	5	6	Area 3	MG/KG	9.6125
B167	B167-2	1/17/06	2	3	Area 3	MG/KG	<12.9
B167	B167-5	1/17/06	5	6	Area 3	MG/KG	<7.4
B168	B168-2	1/17/06	2	3	Area 3	MG/KG	<9.01
B169	B169-2	1/17/06	2	3	Area 3	MG/KG	<6.26
B170	B170-2	1/18/06	2	3	Area 3	MG/KG	37.25
B170	B170-5	1/18/06	5	6	Area 3	MG/KG	13.125
B172	B172-2	1/12/06	2	3	Area 3	MG/KG	48.125
B173	B173-2	1/12/06	2	3	Area 3	MG/KG	10.0875
B173	B173-5	1/12/06	5	6	Area 3	MG/KG	10.9
B174	B174-2	1/12/06	2	3	Area 3	MG/KG	308.75
B174	B174-5	1/12/06	5	6	Area 3	MG/KG	11.4625
B174	B174-10	1/12/06	10	11	Area 3	MG/KG	12.4125
B175	B175-2	2/7/06	2	3	Area 3	MG/KG	11.3125
B177	B177-2	2/2/06	2	3	Area 3	MG/KG	5.6875
B178	B178-2	2/2/06	2	3	Area 3	MG/KG	34.5
B178	B178-5	2/2/06	5	6	Area 3	MG/KG	9.4
B179	B179-2	1/26/06	2	3	Area 3	MG/KG	12.875
B180	B180-2	1/26/06	2	3	Area 3	MG/KG	7.65
B180	B180-5	1/26/06	5	6	Area 3	MG/KG	8.15
B181	B181-2	2/6/06	2	3	Area 3	MG/KG	8.4
B182	B182-2	1/24/06	2	3	Area 3	MG/KG	9.025
B182	B182-5	1/25/06	5	6	Area 3	MG/KG	13.125
B183	B183-2	1/25/06	2	3	Area 3	MG/KG	53.625
B184	B184-2	1/25/06	2	3	Area 3	MG/KG	7.7125
B185	B185-2	1/26/06	2	3	Area 3	MG/KG	24.5
B186	B186-2	1/27/06	2	3	Area 3	MG/KG	9.75
B187	B187-2	1/27/06	2	3	Area 3	MG/KG	10.9
B189	B189-2	2/7/06	2	3	Area 2	MG/KG	12.0125
B191	B191-2	2/1/06	2	3	Area 2	MG/KG	11.2625
B191	B191-5	2/1/06	5	6	Area 2	MG/KG	13.25
B195	B195-2	2/3/06	2	3	Area 3	MG/KG	9.5875
B196	B196-2	1/25/06	2	3	Area 3	MG/KG	8.4125
B197	B197-2	2/1/06	2	3	Area 3	MG/KG	9.525
B198	B198-2	1/26/06	2	3	Area 3	MG/KG	10.025
B198	B198-5	1/26/06	5	6	Area 3	MG/KG	11.0125
B199	B199-2	1/23/06	2	3	Area 3	MG/KG	86.75
B200	B200-2	1/24/06	2	3	Area 3	MG/KG	8.7
B201	B201-2	1/25/06	2	3	Area 3	MG/KG	9.75
B201	B201-5	1/25/06	5	6	Area 3	MG/KG	10.375
B202	B202-2	1/25/06	2	3	Area 3	MG/KG	8.75
B203	B203-2	2/7/06	2	3	Area 3	MG/KG	19.375
B204	B204-2	2/6/06	2	3	Area 3	MG/KG	12.875
B205	B205-2	2/7/06	2	3	Area 3	MG/KG	26.125
B205	B205-5	2/7/06	5	6	Area 3	MG/KG	9.7625
B206	B206-2	2/8/06	2	3	Area 2	MG/KG	18.5

Table A5
Results of Lead Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Lead
B206	B206-5	2/8/06	5	6	Area 2	MG/KG	12.75
B209	B209-2	1/31/06	2	3	Area 2	MG/KG	9.4125
B210	B210-2	1/31/06	2	3	Area 3	MG/KG	16.75
B211	B211-2	2/6/06	2	3	Area 3	MG/KG	20.5
B212	B212-2	1/24/06	2	3	Area 3	MG/KG	7.375
B213	B213-2	2/6/06	2	3	Area 3	MG/KG	7.9
B214	B214-2	1/23/06	2	3	Area 3	MG/KG	8.725
B215	B215-2	2/3/06	2	3	Area 3	MG/KG	17.625
B215	B215-5	2/3/06	5	6	Area 3	MG/KG	9.5875
B216	B216-2	2/2/06	2	3	Area 3	MG/KG	7.875
B217	B217-2	1/24/06	2	3	Area 3	MG/KG	8.1875
B218	B218-2	2/8/06	2	3	Area 3	MG/KG	49.625
B219	B219-2	1/26/06	2	3	Area 3	MG/KG	9.3125
B219	B219-5	1/26/06	5	6	Area 3	MG/KG	10.575
B223	B223-2	2/3/06	2	3	Area 2	MG/KG	10.7625
B223	B223-5	2/3/06	5	6	Area 2	MG/KG	12.225
B228	B228-05	1/18/08	5	6	Area 1	MG/KG	14.7
B229	B229-05	1/18/08	5	6	Area 1	MG/KG	51.5
B235	B235-5	1/25/08	5	6	Area 4	MG/KG	12.4
B247	B247-05	1/17/08	5	6	Area 1	MG/KG	65.4
B248	B248-05	1/15/08	5	6	Area 1	MG/KG	12.9
B251	B251-05	1/16/08	5	6	Area 1	MG/KG	11.4
B262	B262-05	1/29/08	5	6	Area 3	MG/KG	11.6
B270	B270-5	1/20/09	4.5	5.5	Area 3	MG/KG	12
B278	B278-5	1/16/08	5	6	Area 1	MG/KG	16.1
B279	B279-5	1/16/08	5	6	Area 1	MG/KG	35.6
B294	B294-05	1/31/08	4.5	5	Area 2	MG/KG	34.4
B302	B302-05	2/5/08	5	6	Area 4	MG/KG	14.3
B303	B303-05	1/28/08	5	6	Area 4	MG/KG	20.6
B306	B306-05	1/31/08	5	6	Area 3	MG/KG	9.71
B322	B322-05	2/1/08	5	6	Area 3	MG/KG	150
B324	B324-00	4/8/08	0	0.5	Area 4	MG/KG	54.2
B324	B324-02	4/8/08	1.5	2	Area 4	MG/KG	10.2
B325	B325-00	4/8/08	0	0.5	Area 4	MG/KG	508
B325	B325-02	4/8/08	1.5	2	Area 4	MG/KG	9.23
B326	B326-00	4/8/08	0	0.5	Area 4	MG/KG	30.3
B326	B326-02	4/8/08	1.5	2	Area 4	MG/KG	11.3
B-401	LL_B-401-1_100611	10/6/11	0.5	1	Area 2	MG/KG	19
B-403	LL_B-403-1_100711	10/7/11	0.5	1	Area 2	MG/KG	32
B-404	LL_B-404-3_100711	10/7/11	2.5	3	Area 2	MG/KG	6.5
B-405	LL_B-405-1_100711	10/7/11	0.5	1	Area 2	MG/KG	100
B-406	LL_B-406-6_100711	10/7/11	5.5	6	Area 2	MG/KG	7.5
B-407	LL_B-407-9_100711	10/7/11	8.5	9	Area 2	MG/KG	7.3
B-408	LL_B-408-1_100711	10/7/11	0.5	1	Area 2	MG/KG	9.9
B-410	LL_B-410-3_100711	10/7/11	2.5	3	Area 2	MG/KG	38
B-412	LL_B-412-1_100611	10/6/11	0.5	1	Area 1	MG/KG	68
B-413	LL_B-413-3_100611	10/6/11	2.5	3	Area 1	MG/KG	2500
B-414	LL_B-414-1_100611	10/6/11	0.5	1	Area 1	MG/KG	550
B-415	LL_B-415-6_100611	10/6/11	5.5	6	Area 1	MG/KG	8.9

Table A5
Results of Lead Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Lead
B-416	LL_B-416-9_100611	10/6/11	8.5	9	Area 1	MG/KG	6.9
B-418	LL_B-418-6_100611	10/6/11	5.5	6	Area 1	MG/KG	8.0
B-420	LL_B-420-9_100611	10/6/11	8.5	9	Area 1	MG/KG	11
B-422	LL_B-422-1_100511	10/5/11	0.5	1	Area 3	MG/KG	37
B-422	LL_B-422-9_100611	10/6/11	8.5	9	Area 3	MG/KG	6.5
B-424	LL_B-424-3_100511	10/5/11	2.5	3	Area 3	MG/KG	1000
B-426	LL_B-426-1_100511	10/5/11	0.5	1	Area 3	MG/KG	3.7
B-427	LL_B-427-6_100511	10/5/11	5.5	6	Area 3	MG/KG	5.9
B-429	LL_B-429-9_100511	10/5/11	8.5	9	Area 3	MG/KG	16
B-430	LL_B-430-3_100511	10/5/11	2.5	3	Area 3	MG/KG	2100
S001	S001-0"	12/4/07	0	0.5	Area 4	MG/KG	100
S002	S002-0"	12/4/07	0	0.5	Area 4	MG/KG	58.1
S003ALT	S003ALT-0"	12/20/07	0	0.5	Area 4	MG/KG	63.9
S004	S004-0"	1/4/08	0	0.5	Area 4	MG/KG	10.6
S004	S004-12"	1/4/08	1	1.5	Area 4	MG/KG	7.42
S005	S005-0"	12/18/07	0	0.5	Area 4	MG/KG	221
S006	S006-0"	12/17/07	0	0.5	Area 4	MG/KG	122
S006	S006-12"	12/17/07	1	1.5	Area 4	MG/KG	21.3
S007	S007-0"	12/17/07	0	0.5	Area 4	MG/KG	182
S008	S008-0"	12/17/07	0	0.5	Area 4	MG/KG	59.7
S009	S009-0"	12/17/07	0	0.5	Area 4	MG/KG	27
S009	S009-12"	12/17/07	1	1.5	Area 4	MG/KG	53.5
S010	S010-6''	1/19/09	0.5	1	Area 4	MG/KG	12.7
S011	S011-0"	12/17/07	0	0.5	Area 4	MG/KG	3810
S011	S011-12"	12/17/07	1	1.5	Area 4	MG/KG	1450
S012	S012B-0"	12/18/07	0	0.5	Area 4	MG/KG	87.8
S013	S013-0"	1/4/08	0	0.5	Area 4	MG/KG	50.6
S014	S014-0"	12/4/07	0	0.5	Area 4	MG/KG	66.9
S015	S015-0"	12/4/07	0	0.5	Area 4	MG/KG	120
S016	S016B-0"	1/2/08	0	0.5	Area 4	MG/KG	126
S016	S016B-12"	1/2/08	1	1.5	Area 4	MG/KG	10.1
S017	S017-0"	12/4/07	0	0.5	Area 4	MG/KG	100
S018	S018-0"	12/20/07	0	0.5	Area 4	MG/KG	88.2
S019	S019-0"	12/18/07	0	0.5	Area 4	MG/KG	134
S020	S020-0"	12/18/07	0	0.5	Area 4	MG/KG	63.7
S020	S020-12"	12/18/07	1	1.5	Area 4	MG/KG	46.5
S021	S021-6''	1/19/09	0.5	1	Area 4	MG/KG	13.7
S022	S022-0"	12/17/07	0	0.5	Area 4	MG/KG	106
S023	S023-0"	12/17/07	0	0.5	Area 3	MG/KG	89.3
S024	S024-0"	12/17/07	0	0.5	Area 3	MG/KG	19.9
S025	S025-0"	12/18/07	0	0.5	Area 3	MG/KG	62.8
S025	S025-12"	12/18/07	1	1.5	Area 3	MG/KG	58.7
S026	S026-0"	12/18/07	0	0.5	Area 3	MG/KG	185
S026	S026-12"	12/18/07	1	1.5	Area 3	MG/KG	228
S027	S027-0"	12/20/07	0	0.5	Area 3	MG/KG	63.5
S028	S028-0"	12/4/07	0	0.5	Area 3	MG/KG	32
S029	S029-0"	12/4/07	0	0.5	Area 3	MG/KG	125
S029	S029-18"	12/4/07	1.5	2	Area 3	MG/KG	15.7
S030	S030-12"	12/4/07	1	1.5	Area 3	MG/KG	129

Table A5
Results of Lead Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Lead
S031	S031-0"	12/4/07	0	0.5	Area 3	MG/KG	157
S032	S032-0"	12/4/07	0	0.5	Area 3	MG/KG	466
S033	S033-0"	12/4/07	0	0.5	Area 3	MG/KG	98.7
S034	S034-0"	12/4/07	0	0.5	Area 3	MG/KG	1350
S035	S035-0"	12/4/07	0	0.5	Area 3	MG/KG	438
S036	S036-0"	12/4/07	0	0.5	Area 3	MG/KG	478
S037	S037-0"	12/4/07	0	0.5	Area 3	MG/KG	25700
S037	S037-20"	12/4/07	1.67	2.167	Area 3	MG/KG	47300
S038	S038-0"	12/20/07	0	0.5	Area 3	MG/KG	388
S039	S039-0"	1/2/08	0	0.5	Area 3	MG/KG	220
S039	S039-12"	1/2/08	1	1.5	Area 3	MG/KG	54.5
S040	S040-0"	12/20/07	0	0.5	Area 3	MG/KG	120
S040	S040-12"	12/20/07	1	1.5	Area 3	MG/KG	56.5
S041	S041-0"	1/30/08	0	0.5	Area 3	MG/KG	13.5
S042	S042-0"	1/30/08	0	0.5	Area 3	MG/KG	120
S042	S042-12"	1/30/08	1	1.5	Area 3	MG/KG	20
S043	S043-0"	1/30/08	0	0.5	Area 3	MG/KG	34.3
S044	S044-0"	12/20/07	0	0.5	Area 3	MG/KG	207
S045	S045-0"	12/20/07	0	0.5	Area 3	MG/KG	129
S046	S046-0"	12/20/07	0	0.5	Area 3	MG/KG	80.4
S047	S047-6"	1/20/09	0.5	1	Area 3	MG/KG	653
S048	S048-0"	1/7/08	0	0.5	Area 3	MG/KG	1060
S049	S049-6"	1/20/09	0.5	1	Area 3	MG/KG	36.4
S050	S050-0"	12/4/07	0	0.5	Area 3	MG/KG	32.6
S051	S051-0"	12/20/07	0	0.5	Area 3	MG/KG	664
S052	S052-0"	12/20/07	0	0.5	Area 3	MG/KG	294
S052	S052-12"	12/20/07	1	1.5	Area 3	MG/KG	279
S053	S053-0"	12/20/07	0	0.5	Area 3	MG/KG	86.1
S053	S053-12"	12/20/07	1	1.5	Area 3	MG/KG	9.95
S054	S054-0"	1/30/08	0	0.5	Area 3	MG/KG	99.6
S055	S055-0"	1/30/08	0	0.5	Area 3	MG/KG	50.2
S055	S055-12"	1/30/08	1	1.5	Area 3	MG/KG	16.4
S056	S056-0"	1/30/08	0	0.5	Area 3	MG/KG	302
S056	S056-12"	1/30/08	1	1.5	Area 3	MG/KG	105
S057	S057-0"	1/30/08	0	0.5	Area 3	MG/KG	66.5
S058	S058-0"	2/1/08	0	0.5	Area 3	MG/KG	48.7
S059	S059-0"	2/1/08	0	0.5	Area 3	MG/KG	86.8
S059	S059-12"	2/1/08	1	1.5	Area 3	MG/KG	103
S060	S060-0"	12/13/07	0	0.5	Area 3	MG/KG	58
S060	S060-18"	12/13/07	1.5	2	Area 3	MG/KG	16.9
S061	S061-0"	12/13/07	0	0.5	Area 3	MG/KG	37.8
S063	S063-0"	12/14/07	0	0.5	Area 3	MG/KG	26.7
S064	S064-0"	12/14/07	0	0.5	Area 3	MG/KG	34.4
S064	S064-18"	12/14/07	1.5	2	Area 3	MG/KG	23.3
S065	S065-0"	2/1/08	0	0.5	Area 3	MG/KG	131
S065	S065-12"	2/1/08	1	1.5	Area 3	MG/KG	14.5
S066	S066-0"	12/14/07	0	0.5	Area 3	MG/KG	94.2
S067	S067-0"	12/14/07	0	0.5	Area 3	MG/KG	62.1
S068	S068-0"	12/13/07	0	0.5	Area 3	MG/KG	113

Table A5
Results of Lead Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Lead
S069	S069-0"	12/13/07	0	0.5	Area 3	MG/KG	521
S070	S070-0"	12/13/07	0	0.5	Area 3	MG/KG	56.7
S071B	S071B-12"	12/21/07	1	1.5	Area 3	MG/KG	6.83
S072	S072-0"	12/4/07	0	0.5	Area 3	MG/KG	46.9
S073	S073-0"	12/4/07	0	0.5	Area 3	MG/KG	36.4
S074	S074-0"	12/4/07	0	0.5	Area 3	MG/KG	65.3
S075	S075-0"	12/4/07	0	0.5	Area 3	MG/KG	69.2
S076	S076-6''	1/22/09	0.5	1	Area 3	MG/KG	21.6
S078	S078-0"	2/1/08	0	0.5	Area 3	MG/KG	28.1
S078	S078-12"	2/1/08	1	1.5	Area 3	MG/KG	10.9
S079	S079-0"	2/1/08	0	0.5	Area 3	MG/KG	3.34
S080	S080-0"	2/1/08	0	0.5	Area 3	MG/KG	58.1
S081	S081-0"	2/1/08	0	0.5	Area 3	MG/KG	71
S082	S082-0"	12/13/07	0	0.5	Area 3	MG/KG	104
S083	S083-0"	12/13/07	0	0.5	Area 3	MG/KG	219
S083	S083-15"	12/13/07	1.25	1.75	Area 3	MG/KG	16.6
S084	S084-0"	12/4/07	0	0.5	Area 3	MG/KG	101
S085	S085-0"	12/4/07	0	0.5	Area 3	MG/KG	172
S086	S086-6"	1/20/09	0.5	1	Area 3	MG/KG	57.2
S087	S087-0"	12/13/07	0	0.5	Area 3	MG/KG	82.9
S088	S088-0"	1/2/08	0	0.5	Area 3	MG/KG	82
S089	S089-0"	1/2/08	0	0.5	Area 3	MG/KG	10.2
S090	S090-0"	12/13/07	0	0.5	Area 3	MG/KG	42.1
S090	S090-18"	12/13/07	1.5	2	Area 3	MG/KG	3.1
S091	S091-0"	2/1/08	0	0.5	Area 3	MG/KG	313
S092	S092-0"	12/13/07	0	0.5	Area 3	MG/KG	123
S093	S093-0"	12/4/07	0	0.5	Area 3	MG/KG	123
S094	S094-0"	12/4/07	0	0.5	Area 3	MG/KG	282
S095	S095-0"	12/4/07	0	0.5	Area 3	MG/KG	115
S096	S096-0"	12/4/07	0	0.5	Area 3	MG/KG	175
S097	S097-6"	1/20/09	0.5	1	Area 3	MG/KG	44.8
S098	S098-0"	12/4/07	0	0.5	Area 3	MG/KG	79.6
S099	S099-0"	12/13/07	0	0.5	Area 3	MG/KG	10.3
S100	S100-0"	12/13/07	0	0.5	Area 3	MG/KG	24.8
S101	S101-0"	12/13/07	0	0.5	Area 3	MG/KG	14.1
S102	S102-0"	12/13/07	0	0.5	Area 3	MG/KG	51.4
S102	S102-15"	12/13/07	1.25	1.75	Area 3	MG/KG	24.4
S103	S103-0"	1/3/08	0	0.5	Area 2	MG/KG	30.4
S103	S103-12"	1/3/08	1	1.5	Area 2	MG/KG	44.6
S104	S104-0"	1/29/08	0	0.5	Area 2	MG/KG	16.3
S105	S105-0"	1/31/08	0	0.5	Area 2	MG/KG	81
S106	S106-6''	1/22/09	0.5	1	Area 2	MG/KG	41
S106	S106-12''	1/22/09	1	1.5	Area 2	MG/KG	28
S107	S107-0"	12/20/07	0	0.5	Area 2	MG/KG	8.71
S108	S108-0"	12/20/07	0	0.5	Area 2	MG/KG	167
S109	S109-0"	1/31/08	0	0.5	Area 2	MG/KG	365
S109	S109-12"	1/31/08	1	1.5	Area 2	MG/KG	54.7
S110	S110-6''	1/22/09	0.5	1	Area 2	MG/KG	214
S111	S111-0"	12/21/07	0	0.5	Area 2	MG/KG	70.2

Table A5
Results of Lead Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Lead
S111	S111-12"	12/21/07	1	1.5	Area 2	MG/KG	8.39
S112	S112-6''	1/22/09	0.5	1	Area 2	MG/KG	19.1
S113	S113-0"	1/31/08	0	0.5	Area 2	MG/KG	24.3
S113	S113-12"	1/31/08	1	1.5	Area 2	MG/KG	23.4
S114	S114-0"	1/29/08	0	0.5	Area 2	MG/KG	78.2
S115	S115-0"	1/29/08	0	0.5	Area 2	MG/KG	16
S116	S116-0"	1/29/08	0	0.5	Area 2	MG/KG	106
S117	S117-0"	1/31/08	0	0.5	Area 2	MG/KG	15.3
S117	S117-12"	2/1/08	1	1.5	Area 2	MG/KG	12.1
S118	S118-6''	1/22/09	0.5	1	Area 2	MG/KG	331
S119	S119-0"	1/4/08	0	0.5	Area 2	MG/KG	15
S119	S119-12"	1/4/08	1	1.5	Area 2	MG/KG	14.4
S120	S120-0"	1/4/08	0	0.5	Area 2	MG/KG	16.6
S121	S121-0"	1/4/08	0	0.5	Area 2	MG/KG	25.3
S121	S121-12"	1/4/08	1	1.5	Area 2	MG/KG	51.9
S122	S122-0"	1/29/08	0	0.5	Area 1	MG/KG	4.76
S123	S123-0"	11/29/07	0	0.5	Area 1	MG/KG	47.6
S124	S124-0"	11/29/07	0	0.5	Area 1	MG/KG	47.8
S125	S125-0"	1/29/08	0	0.5	Area 1	MG/KG	1570
S126	S126-0"	1/7/08	0	0.5	Area 1	MG/KG	94
S126	S126-12"	1/7/08	1	1.5	Area 1	MG/KG	24.3
S127	S127-0"	2/1/08	0	0.5	Area 3	MG/KG	50.4
S130	S130-0"	1/7/08	0	0.5	Area 3	MG/KG	405
S130	S130-12"	1/7/08	1	1.5	Area 3	MG/KG	298
S131	S131-0"	1/7/08	0	0.5	Area 1	MG/KG	4.43
S132	S132-0"	1/3/08	0	0.5	Area 1	MG/KG	26.3
S133	S133B-0"	11/29/07	0	0.5	Area 1	MG/KG	429
S133	S133B-12"	11/29/07	1	1.5	Area 1	MG/KG	598
S134	S134-0"	1/7/08	0	0.5	Area 1	MG/KG	43.3
S135	S135-6''	1/19/09	0.5	1	Area 1	MG/KG	6.26
S136	S136-0"	11/29/07	0	0.5	Area 1	MG/KG	417
S136	S136-24"	11/29/07	2	2.5	Area 1	MG/KG	12.5
S137	S137-0"	11/29/07	0	0.5	Area 1	MG/KG	211
S138	S138-0"	11/29/07	0	0.5	Area 1	MG/KG	110
S138	S138-18"	11/29/07	1.5	2	Area 1	MG/KG	1230
S139	S139-12"	11/29/07	1	1.5	Area 1	MG/KG	45.7
S139	S139-24"	11/29/07	2	2.5	Area 1	MG/KG	11.2
S140	S140-12"	11/29/07	1	1.5	Area 1	MG/KG	14.7
S141	S141-0"	1/7/08	0	0.5	Area 3	MG/KG	915
S141	S141-12"	1/7/08	1	1.5	Area 3	MG/KG	9.25
S142	S142-0"	1/7/08	0	0.5	Area 3	MG/KG	386
S143	S143-0"	1/7/08	0	0.5	Area 3	MG/KG	43.7
S144B	S144B-0"	1/31/08	0	0.5	Area 3	MG/KG	24.3
S144B	S144B-12"	1/31/08	1	1.5	Area 3	MG/KG	38.4
S145	S145-0"	1/7/08	0	0.5	Area 3	MG/KG	90.2
S145	S145-12"	1/7/08	1	1.5	Area 3	MG/KG	196
S146	S146-0"	11/29/07	0	0.5	Area 1	MG/KG	151
S147	S147-12"	11/29/07	1	1.5	Area 1	MG/KG	47.2
S148	S148-0"	11/29/07	0	0.5	Area 1	MG/KG	4240

Table A5
Results of Lead Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Lead
S149	S149-12"	11/29/07	1	1.5	Area 1	MG/KG	265
S150	S150-12"	11/29/07	1	1.5	Area 1	MG/KG	3700
S151	S151-12"	11/29/07	1	1.5	Area 1	MG/KG	99.2
S152	S152-0"	11/29/07	0	0.5	Area 1	MG/KG	448
S153	S153-0"	11/29/07	0	0.5	Area 1	MG/KG	841
S154	S154-0"	11/29/07	0	0.5	Area 1	MG/KG	247
S155	S155B-0"	11/29/07	0	0.5	Area 1	MG/KG	23.9
S156	S156-0"	1/7/08	0	0.5	Area 3	MG/KG	170
S157	S157-0"	1/2/08	0	0.5	Area 3	MG/KG	51.5
S158	S158-0"	12/17/07	0	0.5	Area 3	MG/KG	275
S158	S158-12"	12/17/07	1	1.5	Area 3	MG/KG	258
S159	S159-0"	12/17/07	0	0.5	Area 3	MG/KG	112
S160	S160-0"	1/7/08	0	0.5	Area 3	MG/KG	136
S161	S161B-0"	11/29/07	0	0.5	Area 1	MG/KG	57
S162	S162-12"	11/29/07	1	1.5	Area 1	MG/KG	69.4
S162	S162-24"	11/29/07	2	2.5	Area 1	MG/KG	20.5
S163	S163-0"	11/29/07	0	0.5	Area 1	MG/KG	12.3
S164	S164-0"	11/29/07	0	0.5	Area 1	MG/KG	310
S165	S165-0"	11/29/07	0	0.5	Area 1	MG/KG	496
S166	S166-0"	11/29/07	0	0.5	Area 1	MG/KG	1180
S167	S167-0"	11/29/07	0	0.5	Area 1	MG/KG	735
S168	S168-0"	11/29/07	0	0.5	Area 1	MG/KG	563
S169	S169-0"	11/29/07	0	0.5	Area 1	MG/KG	370
S170	S170-0"	1/7/08	0	0.5	Area 3	MG/KG	208
S171	S171-0"	12/17/07	0	0.5	Area 3	MG/KG	521
S171	S171-12"	12/17/07	1	1.5	Area 3	MG/KG	5520
S172	S172-0"	12/17/07	0	0.5	Area 3	MG/KG	217
S173	S173-0"	12/17/07	0	0.5	Area 3	MG/KG	21.7
S174	S174-0"	12/14/07	0	0.5	Area 3	MG/KG	34.3
S175	S175-0"	1/31/08	0	0.5	Area 3	MG/KG	60.9
S175	S175-0"	1/7/08	0	0.5	Area 3	MG/KG	82.3
S176	S176-0"	11/28/07	0	0.5	Area 1	MG/KG	858
S177	S177-0"	11/28/07	0	0.5	Area 1	MG/KG	466
S178	S178-0"	11/28/07	0	0.5	Area 1	MG/KG	32.7
S179	S179-0"	11/28/07	0	0.5	Area 1	MG/KG	38.2
S180	S180-0"	11/28/07	0	0.5	Area 1	MG/KG	297
S181	S181-0"	1/31/08	0	0.5	Area 3	MG/KG	260
S182	S182-0"	12/14/07	0	0.5	Area 3	MG/KG	83.2
S183	S183-0"	12/17/07	0	0.5	Area 3	MG/KG	14.9
S184	S184-0"	12/14/07	0	0.5	Area 3	MG/KG	43.3
S185	S185-6''	1/19/09	0.5	1	Area 3	MG/KG	14.4
S186	S186-0"	1/31/08	0	0.5	Area 3	MG/KG	167
S187	S187-0"	1/4/08	0	0.5	Area 1	MG/KG	9.89
S188	S188-0"	11/26/07	0	0.5	Area 1	MG/KG	13
S189	S189-0"	11/26/07	0	0.5	Area 1	MG/KG	8.71
S190	S190-0"	11/26/07	0	0.5	Area 1	MG/KG	102
S191	S191-0"	11/26/07	0	0.5	Area 1	MG/KG	139
S192	S192-0"	11/26/07	0	0.5	Area 1	MG/KG	24.5
S193	S193-0"	11/26/07	0	0.5	Area 1	MG/KG	7.2

Table A5
Results of Lead Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Lead
S194	S194-0"	11/26/07	0	0.5	Area 1	MG/KG	64.7
S195	S195-0"	11/26/07	0	0.5	Area 1	MG/KG	81.2
S196	S196-0"	11/26/07	0	0.5	Area 1	MG/KG	375
S196	S196-18"	11/26/07	1.5	2	Area 1	MG/KG	14.7
S197	S197-0"	11/26/07	0	0.5	Area 1	MG/KG	36.5
S198	S198-0"	11/26/07	0	0.5	Area 1	MG/KG	47.1
S199	S199-12"	11/26/07	1	1.5	Area 1	MG/KG	12.3
S199	S199-24"	11/26/07	2	2.5	Area 1	MG/KG	13
S200	S200-0"	11/26/07	0	0.5	Area 1	MG/KG	30.2
S201	S201-0"	11/26/07	0	0.5	Area 1	MG/KG	29.8
S201	S201-18"	11/26/07	1.5	2	Area 1	MG/KG	18.7
S202	S202-0"	11/28/07	0	0.5	Area 1	MG/KG	15
S203	S203-0"	11/28/07	0	0.5	Area 1	MG/KG	44.8
S204	S204-0"	11/28/07	0	0.5	Area 1	MG/KG	40.5
S205	S205-0"	11/28/07	0	0.5	Area 1	MG/KG	43.7
S206	S206-0"	11/28/07	0	0.5	Area 1	MG/KG	28.7
S207	S207-0"	11/28/07	0	0.5	Area 1	MG/KG	32.4
S208	S208-0"	11/26/07	0	0.5	Area 1	MG/KG	27.6
S209	S209-0"	11/26/07	0	0.5	Area 1	MG/KG	51.5
S210	S210-0"	11/26/07	0	0.5	Area 1	MG/KG	71.4
S211	S211-0"	11/26/07	0	0.5	Area 1	MG/KG	10.9
S212	S212-0"	11/26/07	0	0.5	Area 1	MG/KG	17.7
S213	S213-0"	11/28/07	0	0.5	Area 1	MG/KG	57
S214	S214-0"	11/28/07	0	0.5	Area 1	MG/KG	38.6
S215	S215-0"	11/28/07	0	0.5	Area 1	MG/KG	3.01
S216	S216-0"	11/28/07	0	0.5	Area 1	MG/KG	15
S217	S217-0"	11/28/07	0	0.5	Area 1	MG/KG	25.1
S218	S218-0"	11/28/07	0	0.5	Area 1	MG/KG	6.56
S219	S219-0"	11/28/07	0	0.5	Area 1	MG/KG	26.8
S220	S220-0"	11/28/07	0	0.5	Area 1	MG/KG	41.3
S221	S221-0"	11/28/07	0	0.5	Area 1	MG/KG	10.1
S222	S222-0"	11/28/07	0	0.5	Area 1	MG/KG	6.08
S223	S223-0"	11/28/07	0	0.5	Area 1	MG/KG	100
S224	S224-0"	11/28/07	0	0.5	Area 1	MG/KG	298
S225	S225-0"	11/28/07	0	0.5	Area 1	MG/KG	26.9
S226	S226-0"	11/28/07	0	0.5	Area 1	MG/KG	50.1
S227	S227-0"	11/29/07	0	0.5	Area 1	MG/KG	25.3
S228	S228-0"	11/28/07	0	0.5	Area 1	MG/KG	546
S229	S229-0"	11/28/07	0	0.5	Area 1	MG/KG	73.6
S230	S230-0"	11/28/07	0	0.5	Area 1	MG/KG	5.38
S230	S230-12"	11/28/07	1	1.5	Area 1	MG/KG	6.1
S231	S231-0"	11/28/07	0	0.5	Area 1	MG/KG	28.9
S232	S232-0"	11/28/07	0	0.5	Area 1	MG/KG	30.5
S233	S233-0"	11/28/07	0	0.5	Area 1	MG/KG	66.4
S234	S234-0"	11/28/07	0	0.5	Area 1	MG/KG	12.1
S235	S235-0"	11/28/07	0	0.5	Area 1	MG/KG	73.7
S236	S236-0"	11/28/07	0	0.5	Area 1	MG/KG	30.1
S237	S237-0"	11/29/07	0	0.5	Area 1	MG/KG	34.6
S238	S238-0"	1/28/08	0	0.5	Area 2	MG/KG	19.8

Table A5
Results of Lead Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Lead
S239	S239-0"	1/28/08	0	0.5	Area 2	MG/KG	25.4
S239	S239-12"	1/30/08	1	1.5	Area 2	MG/KG	33.9
S240	S240-6"	1/20/09	0.5	1	Area 2	MG/KG	31.4
S241	S241-6"	1/20/09	0.5	1	Area 2	MG/KG	29.8
S242	S242-0"	1/29/08	0	0.5	Area 2	MG/KG	50.9
S243	S243-0"	1/29/08	0	0.5	Area 2	MG/KG	5.17
S244	S244-0"	1/28/08	0	0.5	Area 2	MG/KG	39.3
S245	S245-0"	1/28/08	0	0.5	Area 2	MG/KG	16.6
S246	S246-0"	1/29/08	0	0.5	Area 2	MG/KG	63
S247	S247-0"	1/29/08	0	0.5	Area 2	MG/KG	44.1
S248	S248-0"	1/28/08	0	0.5	Area 2	MG/KG	40.5
S249	S249-0"	1/28/08	0	0.5	Area 2	MG/KG	127
S250	S250-0"	1/28/08	0	0.5	Area 2	MG/KG	6.82
S250	S250-12"	1/30/08	1	1.5	Area 2	MG/KG	15.4
S251	S251-0"	1/28/08	0	0.5	Area 2	MG/KG	32.3
S251	S251-6"	1/20/09	0.5	1	Area 2	MG/KG	24
S252	S252-0"	1/29/08	0	0.5	Area 2	MG/KG	608
S253	S253-0"	1/29/08	0	0.5	Area 2	MG/KG	26.4
S254	S254-0"	1/29/08	0	0.5	Area 2	MG/KG	157
S254	S254-12"	1/30/08	1	1.5	Area 2	MG/KG	33.4
S255	S255-0"	1/29/08	0	0.5	Area 2	MG/KG	4.57
S256	S256-0"	1/31/08	0	0.5	Area 2	MG/KG	220
S257	S257-0"	1/3/08	0	0.5	Area 2	MG/KG	12.4
S258	S258-0"	1/3/08	0	0.5	Area 2	MG/KG	29.5
S259	S259-0"	1/31/08	0	0.5	Area 2	MG/KG	24.6
S260	S260-0"	1/3/08	0	0.5	Area 2	MG/KG	4.59
S261	S261-0"	12/21/07	0	0.5	Area 3	MG/KG	37.6
S262	S262-0"	12/13/07	0	0.5	Area 3	MG/KG	103
S263	S263-0"	2/1/08	0	0.5	Area 3	MG/KG	15.4
S264	S264-0"	1/3/08	0	0.5	Area 3	MG/KG	56.3
S264	S264-12"	1/3/08	1	1.5	Area 3	MG/KG	42.7
S265	S265-6"	1/20/09	0.5	1	Area 3	MG/KG	44.6
S266	S266-0"	12/14/07	0	0.5	Area 3	MG/KG	32.5
S267	S267-0"	1/4/08	0	0.5	Area 3	MG/KG	48.9
S268	S268-0"	1/2/08	0	0.5	Area 3	MG/KG	235
S268	S268-12"	1/2/08	1	1.5	Area 3	MG/KG	90.7
S269	S269-0"	12/4/07	0	0.5	Area 3	MG/KG	302
S270	S270-0"	12/17/07	0	0.5	Area 4	MG/KG	16.5
S271	S271-0"	1/4/08	0	0.5	Area 1	MG/KG	136
S272	S272-0"	11/28/07	0	0.5	Area 1	MG/KG	29.2
S273	S273-0"	11/28/07	0	0.5	Area 1	MG/KG	527
S274	S274-0"	11/29/07	0	0.5	Area 1	MG/KG	53.9
S274	S274-12"	11/29/07	1	1.5	Area 1	MG/KG	9.48
S275	S275-0"	11/29/07	0	0.5	Area 3	MG/KG	8.95
S275	S275-12"	11/29/07	1	1.5	Area 3	MG/KG	12.4
S276	S276-0"	11/29/07	0	0.5	Area 1	MG/KG	208
S277	S277-0"	1/31/08	0	0.5	Area 2	MG/KG	4690
S278	S278-0"	1/31/08	0	0.5	Area 2	MG/KG	17.3
S279	S279-0"	12/20/07	0	0.5	Area 2	MG/KG	272

Table A5
Results of Lead Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Lead
S279	S279-12"	12/20/07	1	1.5	Area 2	MG/KG	12.3
S280	S280-0"	1/3/08	0	0.5	Area 2	MG/KG	72.7
S281	S281-0"	2/1/08	0	0.5	Area 2	MG/KG	48.7
S282	S282-6"	1/20/09	0.5	1	Area 2	MG/KG	28.7
S282	S282-12"	1/20/09	1	1.5	Area 2	MG/KG	39
S283	S283-0"	1/29/08	0	0.5	Area 2	MG/KG	54.8
S284	S284-0"	1/29/08	0	0.5	Area 2	MG/KG	10.2
S284	S284-12"	1/30/08	1	1.5	Area 2	MG/KG	25.3
S285	S285-0"	11/28/07	0	0.5	Area 1	MG/KG	44.1
S286	S286-0"	11/26/07	0	0.5	Area 1	MG/KG	11.7
S287	S287-0"	11/26/07	0	0.5	Area 1	MG/KG	11.3
S287	S287-12"	11/26/07	1	1.5	Area 1	MG/KG	11.8
S288	S288-0"	11/26/07	0	0.5	Area 1	MG/KG	29.3
S289	S289-0"	11/26/07	0	0.5	Area 1	MG/KG	44.1
S290	S290-0"	11/26/07	0	0.5	Area 1	MG/KG	120
S291	S291-0"	1/7/08	0	0.5	Area 4	MG/KG	98
S292	S292-6''	1/19/09	0.5	1	Area 1	MG/KG	13.5
S293	S293-0"	11/26/07	0	0.5	Area 1	MG/KG	10.6
S293	S293-24"	11/26/07	2	2.5	Area 1	MG/KG	9.72
S294	S294-0"	11/26/07	0	0.5	Area 1	MG/KG	38.5
S295	S295-6"	11/26/07	0.5	1	Area 1	MG/KG	50.7
S296	S296-0"	11/28/07	0	0.5	Area 1	MG/KG	28.1
S296	S296-18"	11/28/07	1.5	2	Area 1	MG/KG	18.7
S297	S297-6"	1/20/09	0.5	1	Area 3	MG/KG	31.7
S297	S297-12"	1/20/09	1	1.5	Area 3	MG/KG	98.7
S298	S298-0	12/4/07	0	0.5	Area 4	MG/KG	45.1

Notes
MG/KG milligrams per kilogram

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
B001	B001-2	12/5/05	2	3	Area 1	UG/KG	<37500
B001	B001-5	12/5/05	5	6	Area 1	UG/KG	5000
B001	B001-10	12/5/05	10	11	Area 1	UG/KG	<3750
B002	B002-2	12/5/05	2	3	Area 1	UG/KG	3750
B002	B002-5	12/5/05	5	6	Area 1	UG/KG	<37500
B002	B002-10	12/5/05	10	11	Area 1	UG/KG	4000
B003	B003-2	12/7/05	2	3	Area 1	UG/KG	<3750
B003	B003-5	12/7/05	5	6	Area 1	UG/KG	138750
B004	B004-2	12/8/05	2	3	Area 1	UG/KG	<18750
B004	B004-5	12/8/05	5	6	Area 1	UG/KG	<3750
B004	B004-10	12/8/05	10	11	Area 1	UG/KG	4000
B005	B005-2	12/8/05	2	3	Area 1	UG/KG	<3750
B005	B005-5	12/8/05	5	6	Area 1	UG/KG	<3750
B005	B005-10	12/8/05	10	11	Area 1	UG/KG	<3750
B006	B006-2	12/12/05	2	3	Area 1	UG/KG	4125
B006	B006-5	12/12/05	5	6	Area 1	UG/KG	<3750
B006	B006-10	12/12/05	10	11	Area 1	UG/KG	5375
B007	B007-2	12/12/05	2	3	Area 1	UG/KG	4375
B007	B007-5	12/12/05	5	6	Area 1	UG/KG	<3750
B007	B007-10	12/12/05	10	11	Area 1	UG/KG	<3750
B008	B008-2	12/8/05	2	3	Area 1	UG/KG	<3750
B008	B008-5	12/8/05	5	6	Area 1	UG/KG	4125
B008	B008-10	12/8/05	10	11	Area 1	UG/KG	<3750
B009	B009-2	12/9/05	2	3	Area 1	UG/KG	<3750
B009	B009-5	12/9/05	5	6	Area 1	UG/KG	<3750
B009	B009-10	12/9/05	10	11	Area 1	UG/KG	5750
B010	B010-2	12/9/05	2	3	Area 4	UG/KG	<3750
B010	B010-5	12/9/05	5	6	Area 4	UG/KG	4750
B010	B010-10	12/9/05	10	11	Area 4	UG/KG	<3750
B011	B011-2	1/9/06	2	3	Area 1	UG/KG	<37500
B011	B011-5	1/9/06	5	6	Area 1	UG/KG	4125
B011	B011-10	1/9/06	10	11	Area 1	UG/KG	<3750
B012	B012-2	1/6/06	2	3	Area 1	UG/KG	<3750
B012	B012-5	1/6/06	5	6	Area 1	UG/KG	<3750
B012	B012-10	1/6/06	10	11	Area 1	UG/KG	<3750
B013	B013-2	12/15/05	2	3	Area 1	UG/KG	<75000
B013	B013-5	12/15/05	5	6	Area 1	UG/KG	<75000
B013	B013-10	12/15/05	10	11	Area 1	UG/KG	<3750
B014	B014-2	12/13/05	2	3	Area 1	UG/KG	<37500
B014	B014-5	12/13/05	5	6	Area 1	UG/KG	<3750
B014	B014-10	12/13/05	10	11	Area 1	UG/KG	3750
B015	B015-2	12/12/05	2	3	Area 1	UG/KG	<3750
B015	B015-5	12/12/05	5	6	Area 1	UG/KG	7500
B015	B015-10	12/12/05	10	11	Area 1	UG/KG	5000
B016	B016-2	12/13/05	2	3	Area 1	UG/KG	4000
B016	B016-5	12/13/05	5	6	Area 1	UG/KG	4125
B016	B016-10	12/13/05	10	11	Area 1	UG/KG	<3750
B017	B017-2	12/29/05	2	3	Area 1	UG/KG	<3750
B017	B017-5	12/29/05	5	6	Area 1	UG/KG	4500
B017	B017-10	12/29/05	10	11	Area 1	UG/KG	<3750
B018	B018-2	12/29/05	2	3	Area 1	UG/KG	<3750
B018	B018-5	12/29/05	5	6	Area 1	UG/KG	<3750
B018	B018-10	12/29/05	10	11	Area 1	UG/KG	<3750
B019	B019-2	12/28/05	2	3	Area 1	UG/KG	<3750
B019	B019-5	12/28/05	5	6	Area 1	UG/KG	<3750
B019	B019-10	12/28/05	10	11	Area 1	UG/KG	<3750
B020	B020-2	12/12/05	2	3	Area 1	UG/KG	<37500
B020	B020-5	12/12/05	5	6	Area 1	UG/KG	<3750
B020	B020-10	12/12/05	10	11	Area 1	UG/KG	215000
B021	B021-2	12/28/05	2	3	Area 4	UG/KG	<3750
B021	B021-5	12/28/05	5	6	Area 4	UG/KG	<3750
B021	B021-10	12/28/05	10	11	Area 4	UG/KG	738750
B022	B022-2	12/28/05	2	3	Area 3	UG/KG	155000
B022	B022-5	12/28/05	5	6	Area 3	UG/KG	537500
B022	B022-10	12/28/05	10	11	Area 3	UG/KG	73750
B023	B023-2	12/28/05	2	3	Area 1	UG/KG	1072500
B023	B023-5	12/28/05	5	6	Area 1	UG/KG	1171250

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
B023	B023-10	12/28/05	10	11	Area 1	UG/KG	4300000
B024	B024-2	12/16/05	2	2.5	Area 1	UG/KG	7250
B024	B024-5	12/16/05	5	6	Area 1	UG/KG	7500
B024	B024-10	12/16/05	10	11	Area 1	UG/KG	<3750
B025	B025-2	12/15/05	2	3	Area 1	UG/KG	5500
B025	B025-5	12/15/05	5	6	Area 1	UG/KG	<3750
B025	B025-10	12/15/05	10	11	Area 1	UG/KG	<3750
B026	B026-2	12/15/05	2	3	Area 1	UG/KG	<75000
B026	B026-5	12/15/05	5	6	Area 1	UG/KG	4250
B026	B026-10	12/15/05	10	11	Area 1	UG/KG	<3750
B027	B027-2	12/14/05	2	3	Area 1	UG/KG	<187500
B027	B027-5	12/15/05	5	6	Area 1	UG/KG	<375000
B027	B027-10	12/15/05	10	11	Area 1	UG/KG	<750000
B028	B028-2	12/13/05	2	3	Area 1	UG/KG	<37500
B028	B028-5	12/13/05	5	6	Area 1	UG/KG	5000
B028	B028-10	12/13/05	10	11	Area 1	UG/KG	5000
B029	B029-2	12/14/05	2	3	Area 1	UG/KG	473750
B029	B029-5	12/14/05	5	6	Area 1	UG/KG	<75000
B029	B029-10	12/14/05	10	11	Area 1	UG/KG	<75000
B030	B030-2	12/14/05	2	3	Area 1	UG/KG	<75000
B030	B030-5	12/14/05	5	6	Area 1	UG/KG	<3750
B030	B030-10	12/14/05	10	11	Area 1	UG/KG	4625
B031	B031-2	1/6/06	2	3	Area 1	UG/KG	<37500
B031	B031-5	1/6/06	5	6	Area 1	UG/KG	5250
B031	B031-10	1/6/06	10	11	Area 1	UG/KG	<3750
B032	B032-2	1/6/06	2	3	Area 1	UG/KG	<37500
B032	B032-5	1/6/06	5	6	Area 1	UG/KG	<37500
B032	B032-10	1/6/06	10	11	Area 1	UG/KG	<37500
B033	B033-2	12/29/05	2	3	Area 1	UG/KG	<3750
B033	B033-5	12/29/05	5	6	Area 1	UG/KG	<3750
B033	B033-10	12/29/05	10	11	Area 1	UG/KG	<3750
B034	B034-2	12/14/05	2	3	Area 1	UG/KG	5125
B034	B034-5	12/14/05	5	6	Area 1	UG/KG	6250
B034	B034-10	12/14/05	10	11	Area 1	UG/KG	<3750
B035	B035-2	12/14/05	2	3	Area 1	UG/KG	<187500
B035	B035-5	12/14/05	5	6	Area 1	UG/KG	5750
B035	B035-10	12/14/05	10	11	Area 1	UG/KG	<3750
B036	B036-2	12/14/05	2	3	Area 1	UG/KG	<3750
B036	B036-5	12/14/05	5	6	Area 1	UG/KG	<3750
B036	B036-10	12/14/05	10	11	Area 1	UG/KG	5500
B037	B037-2	12/19/05	2	3	Area 1	UG/KG	<3750
B037	B037-5	12/19/05	5	6	Area 1	UG/KG	<3750
B037	B037-10	12/19/05	10	11	Area 1	UG/KG	4125
B038	B038-2	12/19/05	2	3	Area 1	UG/KG	33750
B038	B038-5	12/19/05	5	6	Area 1	UG/KG	4500
B038	B038-10	12/19/05	10	11	Area 1	UG/KG	<3750
B039	B039-2	12/16/05	2	3	Area 1	UG/KG	5375
B039	B039-5	12/16/05	5	6	Area 1	UG/KG	<3750
B039	B039-10	12/16/05	10	11	Area 1	UG/KG	5875
B040	B040-2	12/19/05	2	3	Area 1	UG/KG	<37500
B040	B040-5	12/19/05	5	6	Area 1	UG/KG	<75000
B040	B040-10	12/19/05	10	11	Area 1	UG/KG	<3750
B041	B041-2	12/28/05	2	3	Area 3	UG/KG	16250
B041	B041-5	12/28/05	5	6	Area 3	UG/KG	<3750
B041	B041-10	12/28/05	10	11	Area 3	UG/KG	<3750
B042	B042-2	12/20/05	2	3	Area 3	UG/KG	40000
B042	B042-5	12/20/05	5	6	Area 3	UG/KG	105000
B042	B042-10	12/20/05	10	11	Area 3	UG/KG	4750
B043	B043-2	12/16/05	2	3	Area 1	UG/KG	<75000
B043	B043-5	12/16/05	5	6	Area 1	UG/KG	<75000
B043	B043-10	12/16/05	10	11	Area 1	UG/KG	<75000
B044	B044-2	12/16/05	2	3	Area 1	UG/KG	7500
B044	B044-5	12/16/05	5	6	Area 1	UG/KG	<3750
B044	B044-10	12/16/05	10	11	Area 1	UG/KG	4750
B045	B045-2	12/15/05	2	3	Area 1	UG/KG	127500
B045	B045-5	12/15/05	5	6	Area 1	UG/KG	8000
B045	B045-10	12/15/05	10	11	Area 1	UG/KG	312500

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
B046	B046-2	12/15/05	2	3	Area 1	UG/KG	<75000
B046	B046-5	12/15/05	5	6	Area 1	UG/KG	<3750
B046	B046-10	12/15/05	10	11	Area 1	UG/KG	4250
B047	B047-2	12/15/05	2	3	Area 1	UG/KG	<3750
B047	B047-5	12/15/05	5	6	Area 1	UG/KG	<3750
B047	B047-10	12/15/05	10	11	Area 1	UG/KG	<3750
B048	B048-2	12/20/05	2	3	Area 1	UG/KG	<3750
B048	B048-5	12/20/05	5	6	Area 1	UG/KG	3875
B048	B048-10	12/20/05	10	11	Area 1	UG/KG	<187500
B049	B049-2	12/14/05	2	3	Area 1	UG/KG	5000
B049	B049-5	12/14/05	5	6	Area 1	UG/KG	4625
B049	B049-10	12/14/05	10	11	Area 1	UG/KG	<3750
B050	B050-2	12/13/05	2	3	Area 1	UG/KG	<75000
B050	B050-5	12/13/05	5	6	Area 1	UG/KG	<3750
B050	B050-10	12/12/05	10	11	Area 1	UG/KG	<75000
B051	B051-2	12/13/05	2	3	Area 1	UG/KG	<3750
B051	B051-5	12/13/05	5	6	Area 1	UG/KG	<3750
B051	B051-10	12/13/05	10	11	Area 1	UG/KG	<3750
B052	B052-2	12/29/05	2	3	Area 1	UG/KG	<187500
B052	B052-5	12/29/05	5	6	Area 1	UG/KG	<37500
B052	B052-10	12/29/05	10	11	Area 1	UG/KG	<187500
B053	B053-2	12/28/05	2	3	Area 1	UG/KG	<3750
B053	B053-5	12/28/05	5	6	Area 1	UG/KG	<18750
B053	B053-10	12/28/05	10	11	Area 1	UG/KG	<187500
B054	B054-2	12/13/05	2	3	Area 1	UG/KG	<75000
B054	B054-5	12/13/05	5	6	Area 1	UG/KG	<75000
B054	B054-10	12/13/05	10	11	Area 1	UG/KG	<3750
B055	B055-2	12/21/05	2	3	Area 1	UG/KG	360000
B055	B055-5	12/21/05	5	6	Area 1	UG/KG	316250
B055	B055-10	12/21/05	10	11	Area 1	UG/KG	656250
B056	B056-2	12/14/05	2	3	Area 1	UG/KG	56250
B056	B056-5	12/14/05	5	6	Area 1	UG/KG	687500
B056	B056-10	12/14/05	10	11	Area 1	UG/KG	<3750
B057	B057-2	12/13/05	2	3	Area 1	UG/KG	<75000
B057	B057-5	12/13/05	5	6	Area 1	UG/KG	<75000
B057	B057-10	12/13/05	10	11	Area 1	UG/KG	<3750
B058	B058-2	12/20/05	2	3	Area 1	UG/KG	138750
B058	B058-5	12/20/05	5	6	Area 1	UG/KG	9250
B058	B058-10	12/20/05	10	11	Area 1	UG/KG	1487500
B059	B059-2	12/20/05	2	3	Area 1	UG/KG	6250
B059	B059-5	12/20/05	5	6	Area 1	UG/KG	4500
B059	B059-10	12/20/05	10	11	Area 1	UG/KG	<3750
B060	B060-2	12/20/05	2	3	Area 1	UG/KG	<18750
B060	B060-5	12/20/05	5	6	Area 1	UG/KG	6875
B060	B060-10	12/20/05	10	11	Area 1	UG/KG	58750
B061	B061-2	12/20/05	2	3	Area 1	UG/KG	<3750
B061	B061-5	12/20/05	5	6	Area 1	UG/KG	<3750
B061	B061-10	12/20/05	10	11	Area 1	UG/KG	<3750
B062	B062-2	12/21/05	2	3	Area 1	UG/KG	4250
B062	B062-5	12/21/05	5	6	Area 1	UG/KG	<3750
B062	B062-10	12/21/05	10	11	Area 1	UG/KG	<3750
B063	B063-2	1/9/06	2	3	Area 3	UG/KG	15000
B063	B063-5	1/9/06	5	6	Area 3	UG/KG	7000
B063	B063-10	1/9/06	10	11	Area 3	UG/KG	<75000
B064	B064-2	12/23/05	2	3	Area 1	UG/KG	<75000
B064	B064-5	12/23/05	5	6	Area 1	UG/KG	<3750
B064	B064-10	12/23/05	10	11	Area 1	UG/KG	<3750
B065	B065-2	1/12/06	2	3	Area 1	UG/KG	5125
B065	B065-5	1/12/06	5	6	Area 1	UG/KG	4250
B065	B065-10	1/12/06	10	11	Area 1	UG/KG	<3750
B066	B066-2	1/12/06	2	3	Area 1	UG/KG	4625
B066	B066-5	1/12/06	5	6	Area 1	UG/KG	<3750
B066	B066-10	1/12/06	10	11	Area 1	UG/KG	5000
B067	B067-2	12/21/05	2	3	Area 1	UG/KG	112500
B067	B067-5	12/21/05	5	6	Area 1	UG/KG	235000
B067	B067-10	12/21/05	10	11	Area 1	UG/KG	<18750
B068	B068-2	12/21/05	2	3	Area 1	UG/KG	<37500

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
B068	B068-5	12/21/05	5	6	Area 1	UG/KG	86250
B068	B068-10	12/21/05	10	11	Area 1	UG/KG	<37500
B069	B069-2	12/22/05	2	3	Area 1	UG/KG	<3750
B069	B069-5	12/22/05	5	6	Area 1	UG/KG	<3750
B069	B069-10	12/22/05	10	11	Area 1	UG/KG	<3750
B070	B070-2	12/22/05	2	3	Area 1	UG/KG	<187500
B070	B070-5	12/22/05	5	6	Area 1	UG/KG	<3750
B070	B070-10	12/22/05	10	11	Area 1	UG/KG	38750
B071	B071-2	12/21/05	2	3	Area 1	UG/KG	<3750
B071	B071-5	12/21/05	5	6	Area 1	UG/KG	<3750
B071	B071-10	12/21/05	10	11	Area 1	UG/KG	<3750
B072	B072-2	12/21/05	2	3	Area 1	UG/KG	<187500
B072	B072-5	12/21/05	5	6	Area 1	UG/KG	<3750
B072	B072-10	12/21/05	10	11	Area 1	UG/KG	<3750
B073	B073-2	1/30/06	2	3	Area 3	UG/KG	<3750
B073	B073-5	1/30/06	5	6	Area 3	UG/KG	6250
B073	B073-10	1/30/06	10	11	Area 3	UG/KG	<3750
B074	B074-2	1/11/06	2	3	Area 2	UG/KG	11250
B074	B074-5	1/11/06	5	6	Area 2	UG/KG	6625
B074	B074-10	1/11/06	10	11	Area 2	UG/KG	95000
B075	B075-2	1/11/06	2	3	Area 1	UG/KG	<3750
B075	B075-5	1/11/06	5	6	Area 1	UG/KG	5000
B075	B075-10	1/11/06	10	11	Area 1	UG/KG	<3750
B076	B076-2	12/22/05	2	3	Area 2	UG/KG	<187500
B076	B076-5	12/22/05	5	6	Area 2	UG/KG	<187500
B076	B076-10	12/22/05	10	11	Area 2	UG/KG	1550000
B077	B077-2	12/23/05	2	3	Area 2	UG/KG	<3750
B077	B077-5	12/23/05	5	6	Area 2	UG/KG	<3750
B077	B077-10	12/23/05	10	11	Area 2	UG/KG	<3750
B078	B078-2	12/23/05	2	3	Area 2	UG/KG	<18750
B078	B078-5	12/23/05	5	6	Area 2	UG/KG	<75000
B078	B078-10	12/23/05	10	11	Area 2	UG/KG	<3750
B079	B079-2	12/23/05	2	3	Area 2	UG/KG	<75000
B079	B079-5	12/23/05	5	6	Area 2	UG/KG	<75000
B079	B079-10	12/23/05	10	11	Area 2	UG/KG	<3750
B080	B080-2	12/22/05	2	3	Area 1	UG/KG	<187500
B080	B080-5	12/22/05	5	6	Area 1	UG/KG	<187500
B080	B080-10	12/22/05	10	11	Area 1	UG/KG	<3750
B081	B081-2	12/22/05	2	3	Area 1	UG/KG	<37500
B081	B081-5	12/22/05	5	6	Area 1	UG/KG	<3750
B081	B081-10	12/22/05	10	11	Area 1	UG/KG	<3750
B082	B082-2	12/23/05	2	3	Area 1	UG/KG	<75000
B082	B082-5	12/23/05	5	6	Area 1	UG/KG	<3750
B082	B082-10	12/23/05	10	11	Area 1	UG/KG	<3750
B083	B083-2	1/4/06	2	3	Area 2	UG/KG	<187500
B083	B083-5	1/4/06	5	6	Area 2	UG/KG	<3750
B083	B083-10	1/4/06	10	11	Area 2	UG/KG	5625
B084	B084-2	1/5/06	2	3	Area 2	UG/KG	<75000
B084	B084-5	1/5/06	5	6	Area 2	UG/KG	<75000
B084	B084-10	1/5/06	10	11	Area 2	UG/KG	6375
B085	B085-2	12/28/05	2	3	Area 2	UG/KG	<3750
B085	B085-5	12/28/05	5	6	Area 2	UG/KG	5625
B085	B085-10	12/28/05	10	11	Area 2	UG/KG	<3750
B086	B086-2	1/11/06	2	3	Area 2	UG/KG	4250
B086	B086-5	1/11/06	5	6	Area 2	UG/KG	<3750
B086	B086-10	1/11/06	10	11	Area 2	UG/KG	4625
B087	B087-2	1/11/06	2	3	Area 2	UG/KG	<3750
B087	B087-5	1/11/06	5	6	Area 2	UG/KG	<3750
B087	B087-10	1/11/06	10	11	Area 2	UG/KG	<3750
B088	B088-2	1/18/06	2	3	Area 2	UG/KG	<37500
B088	B088-5	1/18/06	5	6	Area 2	UG/KG	<37500
B088	B088-10	1/18/06	10	11	Area 2	UG/KG	<3750
B089	B089-2	1/9/06	2	3	Area 2	UG/KG	7500
B089	B089-5	1/9/06	5	6	Area 2	UG/KG	<75000
B089	B089-10	1/9/06	10	11	Area 2	UG/KG	6250
B090	B090-2	1/10/06	2	3	Area 2	UG/KG	<3750
B090	B090-5	1/10/06	5	6	Area 2	UG/KG	<3750

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
B090	B090-10	1/10/06	10	11	Area 2	UG/KG	4000
B091	B091-2	1/10/06	2	3	Area 2	UG/KG	<37500
B091	B091-5	1/10/06	5	6	Area 2	UG/KG	<3750
B091	B091-10	1/10/06	10	11	Area 2	UG/KG	<3750
B092	B092-2	1/5/06	2	3	Area 2	UG/KG	15000
B092	B092-5	1/5/06	5	6	Area 2	UG/KG	<75000
B092	B092-10	1/5/06	10	11	Area 2	UG/KG	6750
B093	B093-2	1/5/06	2	3	Area 2	UG/KG	10000
B093	B093-5	1/5/06	5	6	Area 2	UG/KG	6250
B093	B093-10	1/5/06	10	11	Area 2	UG/KG	<3750
B094	B094-2	1/5/06	2	3	Area 2	UG/KG	<75000
B094	B094-5	1/5/06	5	6	Area 2	UG/KG	<37500
B094	B094-10	1/5/06	10	11	Area 2	UG/KG	8000
B095	B095-2	1/4/06	2	3	Area 2	UG/KG	<37500
B095	B095-5	1/4/06	5	6	Area 2	UG/KG	<3750
B095	B095-10	1/4/06	10	11	Area 2	UG/KG	<3750
B096	B096-2	12/28/05	2	3	Area 2	UG/KG	<75000
B096	B096-5	12/28/05	5	6	Area 2	UG/KG	<3750
B096	B096-10	12/28/05	10	11	Area 2	UG/KG	4125
B097	B097-2	1/5/06	2	3	Area 2	UG/KG	17500
B097	B097-5	1/5/06	5	6	Area 2	UG/KG	6250
B097	B097-10	1/5/06	10	11	Area 2	UG/KG	4375
B098	B098-2	1/4/06	2	3	Area 2	UG/KG	<187500
B098	B098-5	1/4/06	5	6	Area 2	UG/KG	<3750
B098	B098-10	1/4/06	10	11	Area 2	UG/KG	<3750
B099	B099-2	1/3/06	2	3	Area 2	UG/KG	<18750
B099	B099-5	1/3/06	5	6	Area 2	UG/KG	<3750
B099	B099-10	1/3/06	10	11	Area 2	UG/KG	4625
B100	B100-2	1/10/06	2	3	Area 2	UG/KG	<3750
B100	B100-5	1/10/06	5	6	Area 2	UG/KG	<3750
B100	B100-10	1/10/06	10	11	Area 2	UG/KG	<3750
B101	B101-2	1/10/06	2	3	Area 2	UG/KG	<3750
B101	B101-5	1/10/06	5	6	Area 2	UG/KG	4625
B101	B101-10	1/10/06	10	11	Area 2	UG/KG	<3750
B102	B102-2	1/9/06	2	3	Area 2	UG/KG	<37500
B102	B102-5	1/9/06	5	6	Area 2	UG/KG	7000
B102	B102-10	1/9/06	10	11	Area 2	UG/KG	4500
B103	B103-2	1/6/06	2	3	Area 2	UG/KG	<3750
B103	B103-5	1/6/06	5	6	Area 2	UG/KG	5000
B103	B103-10	1/6/06	10	11	Area 2	UG/KG	<3750
B104	B104-2	2/3/06	2	3	Area 2	UG/KG	<3750
B104	B104-5	2/3/06	5	6	Area 2	UG/KG	<3750
B104	B104-10	2/3/06	10	11	Area 2	UG/KG	<3750
B105	B105-2	1/10/06	2	3	Area 2	UG/KG	<3750
B105	B105-5	1/10/06	5	6	Area 2	UG/KG	<3750
B105	B105-10	1/10/06	10	11	Area 2	UG/KG	<3750
B106	B106-2	12/29/05	2	3	Area 2	UG/KG	<37500
B106	B106-5	12/29/05	5	6	Area 2	UG/KG	<3750
B106	B106-10	12/29/05	10	10.5	Area 2	UG/KG	3750
B107	B107-2	1/4/06	2	3	Area 2	UG/KG	<3750
B107	B107-5	1/4/06	5	6	Area 2	UG/KG	3875
B107	B107-10	1/4/06	10	11	Area 2	UG/KG	<3750
B108	B108-2	1/9/06	2	3	Area 2	UG/KG	<3750
B108	B108-5	1/9/06	5	6	Area 2	UG/KG	5000
B108	B108-10	1/9/06	10	11	Area 2	UG/KG	<3750
B109	B109-2	1/4/06	2	3	Area 2	UG/KG	5625
B109	B109-5	1/4/06	5	6	Area 2	UG/KG	<3750
B109	B109-10	1/4/06	10	11	Area 2	UG/KG	<3750
B110	B110-2	12/28/05	2	3	Area 2	UG/KG	5000
B110	B110-5	12/28/05	5	6	Area 2	UG/KG	<3750
B110	B110-10	12/28/05	10	11	Area 2	UG/KG	4000
B111	B111-2	12/28/05	2	3	Area 2	UG/KG	<18750
B111	B111-5	12/28/05	5	6	Area 2	UG/KG	<18750
B111	B111-10	12/28/05	10	11	Area 2	UG/KG	3875
B112	B112-2	12/29/05	2	3	Area 2	UG/KG	5875
B112	B112-5	12/29/05	5	6	Area 2	UG/KG	<3750
B112	B112-10	12/29/05	10	11	Area 2	UG/KG	5000

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
B113	B113-2	12/29/05	2	3	Area 2	UG/KG	<3750
B113	B113-5	12/29/05	5	6	Area 2	UG/KG	<3750
B113	B113-10	12/29/05	10	11	Area 2	UG/KG	<3750
B114	B114-2	1/3/06	2	3	Area 2	UG/KG	<187500
B114	B114-5	1/3/06	5	6	Area 2	UG/KG	<75000
B114	B114-10	1/3/06	10	11	Area 2	UG/KG	<3750
B115	B115-2	1/3/06	2	3	Area 2	UG/KG	<187500
B115	B115-5	1/3/06	5	6	Area 2	UG/KG	4500
B115	B115-10	1/3/06	10	11	Area 2	UG/KG	<187500
B116	B116-2	1/4/06	2	3	Area 2	UG/KG	<3750
B116	B116-5	1/4/06	5	6	Area 2	UG/KG	5500
B116	B116-10	1/4/06	10	11	Area 2	UG/KG	<3750
B117	B117-2	1/6/06	2	3	Area 2	UG/KG	<3750
B117	B117-5	1/6/06	5	6	Area 2	UG/KG	4000
B117	B117-10	1/6/06	10	11	Area 2	UG/KG	<3750
B118	B118-2	1/6/06	2	3	Area 2	UG/KG	<3750
B118	B118-5	1/6/06	5	6	Area 2	UG/KG	<3750
B118	B118-10	1/6/06	10	11	Area 2	UG/KG	<3750
B119	B119-2	1/27/06	2	3	Area 2	UG/KG	<3750
B119	B119-5	1/27/06	5	6	Area 2	UG/KG	<3750
B119	B119-10	1/27/06	10	11	Area 2	UG/KG	<3750
B120	B120-2	1/30/06	2	3	Area 4	UG/KG	4250
B120	B120-5	1/30/06	5	6	Area 4	UG/KG	<37500
B120	B120-10	1/30/06	10	11	Area 4	UG/KG	63750
B121	B121-2	2/1/06	2	3	Area 4	UG/KG	5875
B121	B121-5	2/1/06	5	6	Area 4	UG/KG	2440000
B121	B121-10	2/1/06	10	11	Area 4	UG/KG	12500
B122	B122-2	1/23/06	2	3	Area 4	UG/KG	<37500
B122	B122-5	1/23/06	5	6	Area 4	UG/KG	<750000
B122	B122-10	1/23/06	10	11	Area 4	UG/KG	<3750
B123	B123-2	1/20/06	2	3	Area 4	UG/KG	393000
B123	B123-5	1/20/06	5	6	Area 4	UG/KG	258000
B123	B123-10	1/19/06	11	12	Area 4	UG/KG	154000
B124	B124-2	1/16/06	2	3	Area 4	UG/KG	<75000
B124	B124-5	1/16/06	5	6	Area 4	UG/KG	<3750
B124	B124-10	1/16/06	10	11	Area 4	UG/KG	<3750
B125	B125-2	1/20/06	2	3	Area 4	UG/KG	<37500
B125	B125-5	1/20/06	5	6	Area 4	UG/KG	<3750
B125	B125-10	1/20/06	10	11	Area 4	UG/KG	<3750
B126	B126-2	1/20/06	2	3	Area 4	UG/KG	<37500
B126	B126-5	1/20/06	5	6	Area 4	UG/KG	<37500
B126	B126-10	1/20/06	10	11	Area 4	UG/KG	<3750
B127	B127-2	1/18/06	2	3	Area 4	UG/KG	10625
B127	B127-5	1/18/06	5	6	Area 4	UG/KG	<3750
B127	B127-10	1/18/06	10	11	Area 4	UG/KG	4375
B128	B128-2	2/1/06	2	3	Area 4	UG/KG	<75000
B128	B128-5	2/1/06	5	6	Area 4	UG/KG	<37500
B128	B128-10	2/1/06	10	11	Area 4	UG/KG	<3750
B129	B129-2	1/18/06	2	3	Area 4	UG/KG	4500
B129	B129-5	1/18/06	5	6	Area 4	UG/KG	<3750
B129	B129-10	1/18/06	10	11	Area 4	UG/KG	4375
B130	B130-2	1/19/06	2	3	Area 4	UG/KG	1875000
B130	B130-5	1/19/06	5	6	Area 4	UG/KG	<37500
B130	B130-10	1/19/06	10	11	Area 4	UG/KG	7500
B131	B131-2	1/19/06	2	3	Area 4	UG/KG	<3750
B131	B131-5	1/19/06	5	6	Area 4	UG/KG	5625
B131	B131-10	1/19/06	10	11	Area 4	UG/KG	<3750
B132	B132-2	1/19/06	2	3	Area 4	UG/KG	4000
B132	B132-5	1/19/06	5	6	Area 4	UG/KG	<3750
B132	B132-10	1/19/06	10	11	Area 4	UG/KG	3750
B134	B134-2	1/23/06	2	3	Area 4	UG/KG	<3750
B134	B134-5	1/23/06	5	6	Area 4	UG/KG	<3750
B134	B134-10	1/23/06	10	11	Area 4	UG/KG	<3750
B135	B135-2	1/16/06	2	3	Area 4	UG/KG	4125
B135	B135-5	1/16/06	5	6	Area 4	UG/KG	<3750
B135	B135-10	1/16/06	10	11	Area 4	UG/KG	<3750
B136	B136-2	1/12/06	2	3	Area 4	UG/KG	<75000

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
B136	B136-5	1/12/06	5	6	Area 4	UG/KG	<75000
B136	B136-10	1/12/06	10	11	Area 4	UG/KG	263750
B137	B137-2	1/13/06	2	3	Area 4	UG/KG	<75000
B137	B137-5	1/13/06	5	6	Area 4	UG/KG	11875
B137	B137-10	1/13/06	10	11	Area 4	UG/KG	<3750
B139	B139-2	1/13/06	2	3	Area 4	UG/KG	<75000
B139	B139-5	1/13/06	5	6	Area 4	UG/KG	<3750
B139	B139-10	1/13/06	10	11	Area 4	UG/KG	3750
B140	B140-2	1/31/06	2	3	Area 4	UG/KG	<37500
B140	B140-5	1/31/06	5	6	Area 4	UG/KG	<37500
B140	B140-10	1/31/06	10	11	Area 4	UG/KG	<3750
B141	B141-2	1/30/06	2	3	Area 3	UG/KG	<3750
B141	B141-5	1/30/06	5	6	Area 3	UG/KG	<37500
B141	B141-10	1/30/06	10	11	Area 3	UG/KG	<3750
B142	B142-2	1/31/06	2	3	Area 3	UG/KG	11500
B142	B142-5	1/31/06	5	6	Area 3	UG/KG	<37500
B142	B142-10	1/31/06	10	11	Area 3	UG/KG	1206250
B143	B143-2	1/18/06	2	3	Area 3	UG/KG	<75000
B143	B143-5	1/18/06	5	6	Area 3	UG/KG	<3750
B143	B143-10	1/18/06	10	11	Area 3	UG/KG	<3750
B144	B144-2	1/13/06	2	3	Area 3	UG/KG	<37500
B144	B144-5	1/13/06	5	6	Area 3	UG/KG	<375000
B144	B144-10	1/13/06	10	11	Area 3	UG/KG	<3750
B145	B145-2	1/19/06	2	3	Area 3	UG/KG	4250
B145	B145-5	1/19/06	5	6	Area 3	UG/KG	4500
B145	B145-10	1/19/06	10	11	Area 3	UG/KG	<3750
B146	B146-2	1/27/06	2	3	Area 3	UG/KG	<3750
B146	B146-5	1/27/06	5	6	Area 3	UG/KG	<3750
B146	B146-10	1/27/06	10	11	Area 3	UG/KG	<3750
B147	B147-2	2/1/06	2	3	Area 3	UG/KG	40000
B147	B147-5	2/1/06	5	6	Area 3	UG/KG	252500
B147	B147-10	2/1/06	10	11	Area 3	UG/KG	22500
B148	B148-2	1/23/06	2	3	Area 3	UG/KG	1270000
B148	B148-5	1/23/06	5	6	Area 3	UG/KG	461250
B148	B148-10	1/23/06	10	11	Area 3	UG/KG	5000
B149	B149-2	1/23/06	2	3	Area 3	UG/KG	711000
B149	B149-5	1/23/06	5	6	Area 3	UG/KG	1030000
B149	B149-10	1/23/06	10	11	Area 3	UG/KG	<1500000
B150	B150-2	1/20/06	2	3	Area 3	UG/KG	<37500
B150	B150-5	1/20/06	5	6	Area 3	UG/KG	<75000
B150	B150-10	1/20/06	10	11	Area 3	UG/KG	<1500000
B151	B151-2	1/19/06	2	3	Area 4	UG/KG	<3750
B151	B151-5	1/19/06	5	6	Area 4	UG/KG	<37500
B151	B151-10	1/19/06	10	11	Area 4	UG/KG	<3750
B152	B152-2	1/20/06	2	3	Area 3	UG/KG	<187500
B152	B152-5	1/20/06	5	6	Area 3	UG/KG	<187500
B152	B152-10	1/20/06	10	11	Area 3	UG/KG	12500
B153	B153-2	1/20/06	2	3	Area 3	UG/KG	<750000
B153	B153-5	1/20/06	5	6	Area 3	UG/KG	<75000
B153	B153-10	1/20/06	10	11	Area 3	UG/KG	<750000
B154	B154-2	1/16/06	2	3	Area 3	UG/KG	<187500
B154	B154-5	1/16/06	5	6	Area 3	UG/KG	<3750
B154	B154-10	1/16/06	10	11	Area 3	UG/KG	4375
B155	B155-2	1/30/06	2	3	Area 3	UG/KG	1860000
B155	B155-5	1/30/06	5	6	Area 3	UG/KG	335000
B155	B155-10	1/30/06	10	11	Area 3	UG/KG	3280000
B156	B156-2	1/13/06	2	3	Area 3	UG/KG	38750
B156	B156-5	1/13/06	5	6	Area 3	UG/KG	<3750
B156	B156-10	1/13/06	10	11	Area 3	UG/KG	716250
B158	B158-2	1/30/06	2	3	Area 3	UG/KG	<3750
B158	B158-5	1/30/06	5	6	Area 3	UG/KG	33750
B158	B158-10	1/30/06	10	11	Area 3	UG/KG	4625
B159	B159-2	1/31/06	2	3	Area 3	UG/KG	<3750
B159	B159-5	1/31/06	5	6	Area 3	UG/KG	<37500
B159	B159-10	1/31/06	10	11	Area 3	UG/KG	<75000
B160	B160-2	1/31/06	2	3	Area 3	UG/KG	6500
B160	B160-5	1/31/06	5	6	Area 3	UG/KG	3750

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
B160	B160-10	1/31/06	10	11	Area 3	UG/KG	<3750
B161	B161-2	1/13/06	2	3	Area 3	UG/KG	10000
B161	B161-5	1/13/06	5	6	Area 3	UG/KG	1337500
B161	B161-10	1/13/06	10	11	Area 3	UG/KG	<3750
B162	B162-2	1/16/06	2	3	Area 3	UG/KG	4500
B162	B162-5	1/16/06	5	6	Area 3	UG/KG	<3750
B162	B162-10	1/16/06	10	11	Area 3	UG/KG	<3750
B163	B163-2	1/16/06	2	3	Area 3	UG/KG	<3750
B163	B163-5	1/16/06	5	6	Area 3	UG/KG	<3750
B163	B163-10	1/16/06	10	11	Area 3	UG/KG	189000
B164	B164-2	1/16/06	2	3	Area 3	UG/KG	3750
B164	B164-5	1/16/06	5	6	Area 3	UG/KG	<3750
B164	B164-10	1/16/06	10	11	Area 3	UG/KG	<75000
B165	B165-2	1/23/06	2	3	Area 3	UG/KG	<3750
B165	B165-5	1/23/06	5	6	Area 3	UG/KG	<37500
B165	B165-10	1/23/06	10	11	Area 3	UG/KG	<3750
B166	B166-2	1/24/06	2	3	Area 3	UG/KG	<3750
B166	B166-5	1/24/06	5	6	Area 3	UG/KG	<3750
B166	B166-10	1/24/06	10	11	Area 3	UG/KG	<3750
B167	B167-2	1/17/06	2	3	Area 3	UG/KG	<3750
B167	B167-5	1/17/06	5	6	Area 3	UG/KG	<3750
B167	B167-10	1/17/06	10	11	Area 3	UG/KG	<3750
B168	B168-2	1/17/06	2	3	Area 3	UG/KG	<375000
B168	B168-5	1/17/06	5	6	Area 3	UG/KG	4375
B168	B168-10	1/17/06	10	11	Area 3	UG/KG	<3750
B169	B169-2	1/17/06	2	3	Area 3	UG/KG	<750000
B169	B169-5	1/17/06	5	6	Area 3	UG/KG	6000
B169	B169-10	1/17/06	10	11	Area 3	UG/KG	<3750
B170	B170-2	1/18/06	2	3	Area 3	UG/KG	<3750
B170	B170-5	1/18/06	5	6	Area 3	UG/KG	35000
B170	B170-10	1/18/06	10	11	Area 3	UG/KG	402500
B171	B171-2	1/11/06	2	3	Area 3	UG/KG	6700000
B171	B171-5	1/11/06	5	6	Area 3	UG/KG	2225000
B171	B171-10	1/11/06	10	11	Area 3	UG/KG	5250000
B172	B172-2	1/12/06	2	3	Area 3	UG/KG	<75000
B172	B172-5	1/12/06	5	6	Area 3	UG/KG	<3750
B172	B172-10	1/12/06	10	11	Area 3	UG/KG	5750
B173	B173-2	1/12/06	2	3	Area 3	UG/KG	<3750
B173	B173-5	1/12/06	5	6	Area 3	UG/KG	4500
B173	B173-10	1/12/06	10	11	Area 3	UG/KG	<3750
B174	B174-2	1/12/06	2	3	Area 3	UG/KG	<75000
B174	B174-5	1/12/06	5	6	Area 3	UG/KG	5000
B174	B174-10	1/12/06	10	11	Area 3	UG/KG	<3750
B175	B175-2	2/7/06	2	3	Area 3	UG/KG	<3750
B175	B175-5	2/7/06	5	6	Area 3	UG/KG	<3750
B175	B175-10	2/7/06	10	11	Area 3	UG/KG	<3750
B176	B176-2	2/7/06	2	3	Area 3	UG/KG	<75000
B176	B176-5	2/7/06	5	6	Area 3	UG/KG	107500
B176	B176-10	2/7/06	10	11	Area 3	UG/KG	<37500
B177	B177-2	2/2/06	2	3	Area 3	UG/KG	<3750
B177	B177-5	2/2/06	5	6	Area 3	UG/KG	42500
B177	B177-10	2/2/06	10	11	Area 3	UG/KG	<3750
B178	B178-2	2/2/06	2	3	Area 3	UG/KG	225000
B178	B178-5	2/2/06	5	6	Area 3	UG/KG	<3750
B178	B178-10	2/2/06	10	11	Area 3	UG/KG	12500
B179	B179-2	1/26/06	2	3	Area 3	UG/KG	<187500
B179	B179-5	1/26/06	5	6	Area 3	UG/KG	975000
B179	B179-10	1/26/06	10	11	Area 3	UG/KG	<187500
B180	B180-2	1/26/06	2	3	Area 3	UG/KG	<3750
B180	B180-5	1/26/06	5	6	Area 3	UG/KG	<3750
B180	B180-10	1/26/06	10	11	Area 3	UG/KG	<3750
B181	B181-2	2/6/06	2	3	Area 3	UG/KG	<3750
B181	B181-5	2/6/06	5	6	Area 3	UG/KG	<187500
B181	B181-10	2/6/06	10	11	Area 3	UG/KG	<3750
B182	B182-2	1/24/06	2	3	Area 3	UG/KG	<3750
B182	B182-5	1/25/06	5	6	Area 3	UG/KG	70000
B182	B182-10	1/25/06	10	11	Area 3	UG/KG	<3750

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
B183	B183-2	1/25/06	2	3	Area 3	UG/KG	<187500
B183	B183-5	1/25/06	5	6	Area 3	UG/KG	<75000
B183	B183-10	1/25/06	10	11	Area 3	UG/KG	1120000
B184	B184-2	1/25/06	2	3	Area 3	UG/KG	<187500
B184	B184-5	1/25/06	5	6	Area 3	UG/KG	<3750
B184	B184-10	1/25/06	10	11	Area 3	UG/KG	<3750
B185	B185-2	1/26/06	2	3	Area 3	UG/KG	<75000
B185	B185-5	1/26/06	5	6	Area 3	UG/KG	<3750
B185	B185-10	1/26/06	10	11	Area 3	UG/KG	<3750
B186	B186-2	1/27/06	2	3	Area 3	UG/KG	<75000
B186	B186-5	1/27/06	5	6	Area 3	UG/KG	<3750
B186	B186-10	1/27/06	10	11	Area 3	UG/KG	<3750
B187	B187-2	1/27/06	2	3	Area 3	UG/KG	4375
B187	B187-5	1/27/06	5	6	Area 3	UG/KG	<3750
B187	B187-10	1/27/06	10	11	Area 3	UG/KG	4250
B188	B188-2	2/7/06	2	3	Area 2	UG/KG	<3750
B188	B188-5	2/7/06	5	6	Area 2	UG/KG	375000
B188	B188-10	2/7/06	10	11	Area 2	UG/KG	125000
B189	B189-2	2/7/06	2	3	Area 2	UG/KG	<3750
B189	B189-5	2/7/06	5	6	Area 2	UG/KG	<37500
B189	B189-10	2/7/06	10	11	Area 2	UG/KG	<3750
B190	B190-2	2/8/06	2	3	Area 2	UG/KG	<3750
B190	B190-5	2/8/06	5	6	Area 2	UG/KG	<3750
B190	B190-10	2/8/06	10	11	Area 2	UG/KG	<3750
B191	B191-2	2/1/06	2	3	Area 2	UG/KG	<75000
B191	B191-5	2/1/06	5	6	Area 2	UG/KG	<75000
B191	B191-10	2/1/06	10	11	Area 2	UG/KG	<75000
B192	B192-2	2/1/06	2	3	Area 2	UG/KG	<75000
B192	B192-5	2/1/06	5	6	Area 2	UG/KG	4875
B192	B192-10	2/1/06	10	11	Area 2	UG/KG	4125
B193	B193-2	2/6/06	2	3	Area 3	UG/KG	5625
B193	B193-5	2/6/06	5	6	Area 3	UG/KG	<3750
B193	B193-10	2/6/06	10	11	Area 3	UG/KG	<3750
B194	B194-2	2/3/06	2	3	Area 3	UG/KG	8750
B194	B194-5	2/3/06	5	6	Area 3	UG/KG	5250
B194	B194-10	2/3/06	10	11	Area 3	UG/KG	566000
B195	B195-2	2/3/06	2	3	Area 3	UG/KG	7250
B195	B195-5	2/3/06	5	6	Area 3	UG/KG	5875
B195	B195-10	2/3/06	10	11	Area 3	UG/KG	5000
B196	B196-2	1/25/06	2	3	Area 3	UG/KG	<3750
B196	B196-5	1/25/06	5	6	Area 3	UG/KG	<3750
B196	B196-10	1/25/06	10	11	Area 3	UG/KG	<3750
B197	B197-2	2/1/06	2	3	Area 3	UG/KG	41250
B197	B197-5	2/1/06	5	6	Area 3	UG/KG	<3750
B197	B197-10	2/1/06	10	11	Area 3	UG/KG	4125
B198	B198-2	1/26/06	2	3	Area 3	UG/KG	<3750
B198	B198-5	1/26/06	5	6	Area 3	UG/KG	<3750
B198	B198-10	1/26/06	10	11	Area 3	UG/KG	<3750
B199	B199-2	1/23/06	2	3	Area 3	UG/KG	<75000
B199	B199-5	1/23/06	5	6	Area 3	UG/KG	<750000
B199	B199-10	1/23/06	10	11	Area 3	UG/KG	<375000
B200	B200-2	1/24/06	2	3	Area 3	UG/KG	<3750
B200	B200-5	1/24/06	5	6	Area 3	UG/KG	<3750
B200	B200-10	1/24/06	10	11	Area 3	UG/KG	<3750
B201	B201-2	1/25/06	2	3	Area 3	UG/KG	<3750
B201	B201-5	1/25/06	5	6	Area 3	UG/KG	<3750
B201	B201-10	1/25/06	10	11	Area 3	UG/KG	<3750
B202	B202-2	1/25/06	2	3	Area 3	UG/KG	5875
B202	B202-5	1/25/06	5	6	Area 3	UG/KG	<3750
B202	B202-10	1/25/06	10	11	Area 3	UG/KG	<3750
B203	B203-2	2/7/06	2	3	Area 3	UG/KG	81250
B203	B203-5	2/7/06	5	6	Area 3	UG/KG	2000000
B203	B203-10	2/7/06	10	11	Area 3	UG/KG	10625
B204	B204-2	2/6/06	2	3	Area 3	UG/KG	<3750
B204	B204-5	2/6/06	5	6	Area 3	UG/KG	573750
B204	B204-10	2/6/06	10	11	Area 3	UG/KG	<3750
B205	B205-2	2/7/06	2	3	Area 3	UG/KG	<37500

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
B205	B205-5	2/7/06	5	6	Area 3	UG/KG	<3750
B205	B205-10	2/7/06	10	11	Area 3	UG/KG	<3750
B206	B206-2	2/8/06	2	3	Area 2	UG/KG	<37500
B206	B206-5	2/8/06	5	6	Area 2	UG/KG	<3750
B206	B206-10	2/8/06	10	11	Area 2	UG/KG	<3750
B207	B207-2	2/8/06	2	3	Area 2	UG/KG	<75000
B207	B207-5	2/8/06	5	6	Area 2	UG/KG	<3750
B207	B207-10	2/8/06	10	11	Area 2	UG/KG	<3750
B208	B208-2	1/31/06	2	3	Area 2	UG/KG	<37500
B208	B208-5	1/31/06	5	6	Area 2	UG/KG	<3750
B208	B208-10	1/31/06	10	11	Area 2	UG/KG	<3750
B209	B209-2	1/31/06	2	3	Area 2	UG/KG	<37500
B209	B209-5	1/31/06	5	6	Area 2	UG/KG	<37500
B209	B209-10	1/31/06	10	11	Area 2	UG/KG	<187500
B210	B210-2	1/31/06	2	3	Area 3	UG/KG	<37500
B210	B210-5	1/31/06	5	6	Area 3	UG/KG	<3750
B210	B210-10	1/31/06	10	11	Area 3	UG/KG	<3750
B211	B211-2	2/6/06	2	3	Area 3	UG/KG	<75000
B211	B211-5	2/6/06	5	6	Area 3	UG/KG	<75000
B211	B211-10	2/6/06	10	11	Area 3	UG/KG	<3750
B212	B212-2	1/24/06	2	3	Area 3	UG/KG	<3750
B212	B212-5	1/24/06	5	6	Area 3	UG/KG	<3750
B212	B212-10	1/24/06	10	11	Area 3	UG/KG	<3750
B213	B213-2	2/6/06	2	3	Area 3	UG/KG	5750
B213	B213-5	2/6/06	5	6	Area 3	UG/KG	<3750
B213	B213-10	2/6/06	10	11	Area 3	UG/KG	4500
B214	B214-2	1/23/06	2	3	Area 3	UG/KG	81250
B214	B214-5	1/23/06	5	6	Area 3	UG/KG	<3750
B214	B214-10	1/23/06	10	11	Area 3	UG/KG	<3750
B215	B215-2	2/3/06	2	3	Area 3	UG/KG	5500
B215	B215-5	2/3/06	5	6	Area 3	UG/KG	4375
B215	B215-10	2/3/06	10	11	Area 3	UG/KG	5000
B216	B216-2	2/2/06	2	3	Area 3	UG/KG	<3750
B216	B216-5	2/2/06	5	6	Area 3	UG/KG	<3750
B216	B216-10	2/2/06	10	11	Area 3	UG/KG	<3750
B217	B217-2	1/24/06	2	3	Area 3	UG/KG	<3750
B217	B217-5	1/24/06	5	6	Area 3	UG/KG	<3750
B217	B217-10	1/24/06	10	11	Area 3	UG/KG	<3750
B218	B218-2	2/8/06	2	3	Area 3	UG/KG	<75000
B218	B218-5	2/8/06	5	6	Area 3	UG/KG	<37500
B218	B218-10	2/8/06	10	11	Area 3	UG/KG	<3750
B219	B219-2	1/26/06	2	3	Area 3	UG/KG	<3750
B219	B219-5	1/26/06	5	6	Area 3	UG/KG	<3750
B219	B219-10	1/26/06	10	11	Area 3	UG/KG	<3750
B220	B220-2	1/26/06	2	3	Area 3	UG/KG	<75000
B220	B220-5	1/26/06	5	6	Area 3	UG/KG	<37500
B220	B220-10	1/26/06	10	11	Area 3	UG/KG	<3750
B221	B221-2	1/27/06	2	3	Area 2	UG/KG	<3750
B221	B221-5	1/27/06	5	6	Area 2	UG/KG	<3750
B221	B221-10	1/27/06	10	11	Area 2	UG/KG	<3750
B222	B222-2	2/3/06	2	3	Area 2	UG/KG	<3750
B222	B222-5	2/3/06	5	6	Area 2	UG/KG	<3750
B222	B222-10	2/3/06	10	11	Area 2	UG/KG	<3750
B223	B223-2	2/3/06	2	3	Area 2	UG/KG	<3750
B223	B223-5	2/3/06	5	6	Area 2	UG/KG	<3750
B223	B223-10	2/3/06	10	11	Area 2	UG/KG	<3750
B224	B224-05	1/21/08	5	6	Area 1	UG/KG	820
B224	B224-10	1/21/08	10	11	Area 1	UG/KG	<530
B225	B225-5	1/21/08	5	6	Area 1	UG/KG	<560
B225	B225-10	1/21/08	9	10	Area 1	UG/KG	<560
B226	B226-5	1/18/08	5	6	Area 1	UG/KG	<540
B226	B226-10	1/18/08	9	10	Area 1	UG/KG	<570
B227	B227-5	1/21/08	5	6	Area 1	UG/KG	<560
B227	B227-10	1/21/08	10	11	Area 1	UG/KG	86000
B228	B228-05	1/18/08	5	6	Area 1	UG/KG	130000
B228	B228-10	1/18/08	10	11	Area 1	UG/KG	23400
B229	B229-05	1/18/08	5	6	Area 1	UG/KG	<570

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
B229	B229-10	1/18/08	10	11	Area 1	UG/KG	773000
B230	B230-5	1/17/08	5	6	Area 1	UG/KG	<560
B230	B230-10	1/17/08	9	10	Area 1	UG/KG	19660
B231	B231-5	1/17/08	5	6	Area 1	UG/KG	<550
B231	B231-10	1/17/08	9	10	Area 1	UG/KG	<550
B232	B232-05	1/21/08	5	6	Area 3	UG/KG	<610
B232	B232-10	1/21/08	10	11	Area 3	UG/KG	<600
B233	B233-05	1/23/08	5	6	Area 4	UG/KG	<560
B233	B233-10	1/23/08	10	11	Area 4	UG/KG	<560
B234	B234-05	1/23/08	5	6	Area 4	UG/KG	<570
B234	B234-10	1/23/08	10	11	Area 4	UG/KG	<560
B235	B235-5	1/25/08	5	6	Area 4	UG/KG	190
B235	B235-10	1/25/08	9	10	Area 4	UG/KG	420
B236	B236-05	1/22/08	5	6	Area 3	UG/KG	<570
B236	B236-10	1/22/08	10	11	Area 3	UG/KG	910
B237	B237-5	1/23/08	5	6	Area 3	UG/KG	1200000
B237	B237-10	1/23/08	10	11	Area 3	UG/KG	690000
B238	B238-5	1/25/08	5	6	Area 3	UG/KG	370000
B238	B238-10	1/25/08	10	11	Area 3	UG/KG	880000
B239	B239-05	1/22/08	5	6	Area 3	UG/KG	250000
B239	B239-10	1/22/08	10	11	Area 3	UG/KG	<590
B240	B240-5	1/22/08	5	6	Area 3	UG/KG	<570
B240	B240-10	1/22/08	9	10	Area 3	UG/KG	<570
B241	B241-5	1/23/08	5	6	Area 3	UG/KG	10000000
B241	B241-10	1/23/08	10	11	Area 3	UG/KG	11000000
B242	B242-05	1/25/08	5	6	Area 3	UG/KG	1500000
B242	B242-10	1/25/08	10	11	Area 3	UG/KG	1900
B243	B243-05	1/25/08	5	6	Area 3	UG/KG	28700
B243	B243-10	1/25/08	10	11	Area 3	UG/KG	1000000
B244	B244-05	1/17/08	5	6	Area 1	UG/KG	<580
B244	B244-10	1/17/08	10	11	Area 1	UG/KG	<590
B245	B245-05	1/15/08	5	6	Area 1	UG/KG	<580
B245	B245-10	1/15/08	10	11	Area 1	UG/KG	<590
B246	B246-5	1/15/08	5	6	Area 1	UG/KG	3200
B246	B246-10	1/15/08	10	11	Area 1	UG/KG	40000
B247	B247-05	1/17/08	5	6	Area 1	UG/KG	<570
B247	B247-10	1/17/08	10	11	Area 1	UG/KG	<580
B248	B248-05	1/15/08	5	6	Area 1	UG/KG	<570
B248	B248-10	1/15/08	10	11	Area 1	UG/KG	<560
B249	B249-05	1/14/08	5	6	Area 1	UG/KG	2400000
B249	B249-10	1/14/08	10	11	Area 1	UG/KG	530000
B250	B250-05	1/16/08	5	6	Area 1	UG/KG	<590
B250	B250-10	1/16/08	10	11	Area 1	UG/KG	<590
B251	B251-05	1/16/08	5	6	Area 1	UG/KG	<580
B251	B251-10	1/16/08	10	11	Area 1	UG/KG	<570
B252	B252-5	1/15/08	5	6	Area 1	UG/KG	8860
B252	B252-10	1/15/08	10	11	Area 1	UG/KG	<550
B253	B253-05	1/31/08	5	6	Area 4	UG/KG	412000
B253	B253-10	1/31/08	10	11	Area 4	UG/KG	1700000
B254	B254-05	2/5/08	5	6	Area 4	UG/KG	<570
B254	B254-10	2/5/08	10	11	Area 4	UG/KG	<560
B255	B255-05	1/31/08	5	6	Area 3	UG/KG	<580
B255	B255-10	1/31/08	10	11	Area 3	UG/KG	<590
B256	B256-05	1/31/08	5	6	Area 3	UG/KG	<570
B256	B256-10	1/31/08	10	11	Area 3	UG/KG	<590
B257	B257-05	1/30/08	5	6	Area 3	UG/KG	68000
B257	B257-10	1/30/08	10	11	Area 3	UG/KG	1100000
B258	B258-05	1/31/08	5	6	Area 3	UG/KG	25000
B258	B258-10	1/31/08	10	11	Area 3	UG/KG	187400
B259	B259-05	2/1/08	5	6	Area 3	UG/KG	<590
B259	B259-10	2/1/08	10	11	Area 3	UG/KG	<580
B260	B260-05	2/1/08	5	6	Area 3	UG/KG	333800
B260	B260-10	2/1/08	10	11	Area 3	UG/KG	140000
B261	B261-5	1/21/09	4.5	5.5	Area 3	UG/KG	807000
B261	B261-10	1/21/09	9.5	10.5	Area 3	UG/KG	700000
B262	B262-05	1/29/08	5	6	Area 3	UG/KG	<570
B262	B262-10	1/29/08	10	11	Area 3	UG/KG	<560

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
B263	B263-05	2/4/08	5	6	Area 3	UG/KG	<570
B263	B263-10	2/4/08	10	11	Area 3	UG/KG	<560
B264	B264-5	1/15/08	5	6	Area 1	UG/KG	<570
B264	B264-10	1/15/08	10	11	Area 1	UG/KG	<550
B266	B266-05	1/14/08	5	6	Area 1	UG/KG	<560
B266	B266-10	1/14/08	10	11	Area 1	UG/KG	<670
B267	B267-05	1/15/08	5	6	Area 1	UG/KG	<580
B267	B267-10	1/15/08	10	11	Area 1	UG/KG	<600
B268	B268-05	2/1/08	5	6	Area 1	UG/KG	<580
B268	B268-10	2/1/08	10	11	Area 1	UG/KG	<580
B270	B270-5	1/20/09	4.5	5.5	Area 3	UG/KG	<240
B270	B270-10	1/20/09	10	11	Area 3	UG/KG	<260
B271	B271-5	1/14/08	5	6	Area 1	UG/KG	<580
B271	B271-10	1/14/08	10	11	Area 1	UG/KG	20
B272	B272-5	1/14/08	5	6	Area 1	UG/KG	<600
B272	B272-10	1/14/08	10	11	Area 1	UG/KG	<570
B274	B274-05	1/14/08	5	6	Area 1	UG/KG	<580
B274	B274-10	1/14/08	10	11	Area 1	UG/KG	<560
B275	B275-5	1/14/08	5	6	Area 1	UG/KG	<570
B275	B275-10	1/14/08	10	11	Area 1	UG/KG	<520
B276	B276-05	2/4/08	5	6	Area 3	UG/KG	<570
B276	B276-10	2/4/08	10	11	Area 3	UG/KG	<630
B277	B277-5	1/16/08	5	6	Area 3	UG/KG	4400
B277	B277-10	1/16/08	10	11	Area 3	UG/KG	<570
B278	B278-5	1/16/08	5	6	Area 1	UG/KG	183900
B278	B278-10	1/16/08	10	11	Area 1	UG/KG	71200
B279	B279-5	1/16/08	5	6	Area 1	UG/KG	136000
B279	B279-10	1/16/08	10	11	Area 1	UG/KG	48000
B280	B280-5	1/16/08	5	6	Area 1	UG/KG	44000
B280	B280-10	1/16/08	10	11	Area 1	UG/KG	39000
B281	B281-5	1/14/08	5	6	Area 1	UG/KG	<610
B281	B281-10	1/14/08	10	11	Area 1	UG/KG	19000
B282	B282-05	1/28/08	5	6	Area 1	UG/KG	2400
B282	B282-10	1/28/08	10	11	Area 1	UG/KG	<510
B283	B283-05	1/29/08	5	6	Area 1	UG/KG	120000
B283	B283-10	1/29/08	10	11	Area 1	UG/KG	<580
B284	B284-05	1/28/08	5	6	Area 2	UG/KG	11000
B284	B284-10	1/28/08	10	11	Area 2	UG/KG	<580
B285	B285-05	1/28/08	5	6	Area 2	UG/KG	<590
B285	B285-10	1/28/08	10	11	Area 2	UG/KG	<620
B286	B286-5	1/22/09	5	6	Area 2	UG/KG	<220
B286	B286-10	1/22/09	10	11	Area 2	UG/KG	<230
B287	B287-5	1/22/08	5	6	Area 2	UG/KG	<600
B287	B287-10	1/22/08	10	11	Area 2	UG/KG	<580
B288	B288-05	1/17/08	5	6	Area 2	UG/KG	<550
B288	B288-10	1/17/08	10	11	Area 2	UG/KG	<520
B289	B289-5	1/28/08	5	6	Area 2	UG/KG	<570
B289	B289-10	1/28/08	10	11	Area 2	UG/KG	<560
B290	B290-5	1/28/08	5	6	Area 2	UG/KG	19
B290	B290-10	1/28/08	10	11	Area 2	UG/KG	25690
B291	B291-10	1/29/08	10	11	Area 2	UG/KG	<580
B292	B292-5	1/22/09	5	6	Area 2	UG/KG	1500000
B292	B292-10	1/22/09	10	11	Area 2	UG/KG	160000
B293	B293-5	1/22/09	5	6	Area 2	UG/KG	<290
B293	B293-10	1/22/09	10	11	Area 2	UG/KG	<240
B294	B294-05	1/31/08	4.5	5	Area 2	UG/KG	760
B294	B294-10	1/31/08	10	11	Area 2	UG/KG	3150
B295	B295-5	1/22/09	5	6	Area 2	UG/KG	10500
B295	B295-10	1/22/09	10	11	Area 2	UG/KG	550
B297	B297-5	1/20/09	4.5	5.5	Area 2	UG/KG	<310
B297	B297-10	1/20/09	9.5	10.5	Area 2	UG/KG	<240
B298	B298-5	1/28/08	5	6	Area 2	UG/KG	<560
B298	B298-10	1/28/08	10	11	Area 2	UG/KG	<600
B299	B299-5	1/19/09	5	6	Area 4	UG/KG	760000
B299	B299-10	1/19/09	9.5	10.5	Area 4	UG/KG	3200000
B300	B300-05	2/6/08	5	6	Area 4	UG/KG	<560
B300	B300-10	2/6/08	10	11	Area 4	UG/KG	<570

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
B301	B301-05	2/6/08	5	6	Area 4	UG/KG	<570
B301	B301-10	2/6/08	10	11	Area 4	UG/KG	<570
B302	B302-05	2/5/08	5	6	Area 4	UG/KG	<570
B302	B302-10	2/5/08	10	11	Area 4	UG/KG	<560
B303	B303-05	1/28/08	5	6	Area 4	UG/KG	483000
B303	B303-10	1/28/08	10	11	Area 4	UG/KG	5200000
B304	B304-5	1/19/09	4.5	5.5	Area 3	UG/KG	46000
B304	B304-10	1/19/09	9.5	10.5	Area 3	UG/KG	300
B305	B305-5	1/19/09	4.5	5.5	Area 3	UG/KG	10000
B305	B305-10	1/19/09	9.5	10.5	Area 3	UG/KG	19000
B306	B306-05	1/31/08	5	6	Area 3	UG/KG	560000
B306	B306-10	1/31/08	10	11	Area 3	UG/KG	66000
B307	B307-5	1/28/08	5	6	Area 3	UG/KG	170
B307	B307-10	1/28/08	10	11	Area 3	UG/KG	150
B308	B308-05	1/30/08	5	6	Area 3	UG/KG	42500
B308	B308-10	1/30/08	10	11	Area 3	UG/KG	<540
B309	B309-5	1/19/09	4.5	5.5	Area 3	UG/KG	470
B309	B309-10	1/19/09	9.5	10.5	Area 3	UG/KG	1600
B310	B310-05	2/4/08	5	6	Area 3	UG/KG	2700
B310	B310-10	2/4/08	10	11	Area 3	UG/KG	<560
B311	B311-05	2/5/08	5	6	Area 3	UG/KG	200000
B311	B311-10	2/5/08	10	11	Area 3	UG/KG	<580
B312	B312-05	1/30/08	4.5	5.5	Area 3	UG/KG	<560
B312	B312-10	1/30/08	10	11	Area 3	UG/KG	<550
B313	B313-05	2/1/08	4.5	5.5	Area 3	UG/KG	<570
B313	B313-10	2/1/08	10	11	Area 3	UG/KG	<550
B314	B314-05	1/30/08	5	6	Area 2	UG/KG	790
B314	B314-10	1/30/08	10	11	Area 2	UG/KG	<600
B315	B315-05	1/30/08	4.5	5.5	Area 3	UG/KG	33000
B315	B315-10	1/30/08	10	11	Area 3	UG/KG	394000
B316	B316-05	1/30/08	4.5	5.5	Area 3	UG/KG	4900
B316	B316-10	1/30/08	10	11	Area 3	UG/KG	307600
B317	B317-05	1/29/08	4.5	5.5	Area 3	UG/KG	<560
B317	B317-10	1/29/08	10	11	Area 3	UG/KG	<570
B318	B318-05	1/28/08	4.5	5.5	Area 2	UG/KG	<570
B318	B318-10	1/28/08	10	11	Area 2	UG/KG	<580
B319	B319-5	1/21/09	5	6	Area 2	UG/KG	<290
B319	B319-10	1/21/09	10	11	Area 2	UG/KG	<250
B320	B320-05	1/29/08	4.5	5.5	Area 3	UG/KG	<550
B320	B320-10	1/29/08	10	11	Area 3	UG/KG	780
B321	B321-05	1/30/08	4.5	5.5	Area 3	UG/KG	<560
B321	B321-10	1/30/08	10	11	Area 3	UG/KG	<550
B322	B322-05	2/1/08	5	6	Area 3	UG/KG	<560
B322	B322-10	2/1/08	10	11	Area 3	UG/KG	<560
B323	B323-05	1/28/08	4.5	5.5	Area 3	UG/KG	3360
B323	B323-10	1/28/08	10	11	Area 3	UG/KG	<570
B-401	LL_B-401-1_100611	10/6/11	0.5	1	Area 2	UG/KG	23000
B-401	LL_B-401-3_100611	10/6/11	2.5	3	Area 2	UG/KG	2500
B-401	LL_B-401-6_100611	10/6/11	5.5	6	Area 2	UG/KG	4700
B-401	LL_B-401-9_100611	10/6/11	8.5	9	Area 2	UG/KG	<500
B-402	LL_B-402-1_100611	10/6/11	0.5	1	Area 2	UG/KG	<500
B-402	LL_B-402-3_100611	10/6/11	2.5	3	Area 2	UG/KG	<500
B-402	LL_B-402-6_100611	10/6/11	5.5	6	Area 2	UG/KG	<500
B-402	LL_B-402-9_100611	10/6/11	8.5	9	Area 2	UG/KG	<500
B-403	LL_B-403-1_100711	10/7/11	0.5	1	Area 2	UG/KG	3500
B-403	LL_B-403-3_100711	10/7/11	2.5	3	Area 2	UG/KG	8000
B-403	LL_B-403-6_100711	10/7/11	5.5	6	Area 2	UG/KG	<500
B-403	LL_B-403-9_100711	10/7/11	8.5	9	Area 2	UG/KG	<500
B-404	LL_B-404-1_100711	10/7/11	0.5	1	Area 2	UG/KG	20000
B-404	LL_B-404-3_100711	10/7/11	2.5	3	Area 2	UG/KG	31000
B-404	LL_B-404-6_100711	10/7/11	5.5	6	Area 2	UG/KG	8700
B-404	LL_B-404-9_100711	10/7/11	8.5	9	Area 2	UG/KG	22000
B-405	LL_B-405-1_100711	10/7/11	0.5	1	Area 2	UG/KG	1400
B-405	LL_B-405-3_100711	10/7/11	2.5	3	Area 2	UG/KG	8400000
B-406	LL_B-406-1_100711	10/7/11	0.5	1	Area 2	UG/KG	<500
B-406	LL_B-406-3_100711	10/7/11	2.5	3	Area 2	UG/KG	690
B-406	LL_B-406-6_100711	10/7/11	5.5	6	Area 2	UG/KG	730

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
B-406	LL_B-406-9_100711	10/7/11	8.5	9	Area 2	UG/KG	13000
B-407	LL_B-407-1_100711	10/7/11	0.5	1	Area 2	UG/KG	41000
B-407	LL_B-407-3_100711	10/7/11	2.5	3	Area 2	UG/KG	12000
B-407	LL_B-407-6_100711	10/7/11	5.5	6	Area 2	UG/KG	11000
B-407	LL_B-407-9_100711	10/7/11	8.5	9	Area 2	UG/KG	17000
B-408	LL_B-408-1_100711	10/7/11	0.5	1	Area 2	UG/KG	8100
B-408	LL_B-408-3_100711	10/7/11	2.5	3	Area 2	UG/KG	<500
B-408	LL_B-408-6_100711	10/7/11	5.5	6	Area 2	UG/KG	<500
B-408	LL_B-408-9_100711	10/7/11	8.5	9	Area 2	UG/KG	<500
B-409	LL_B-409-1_100711	10/7/11	0.5	1	Area 2	UG/KG	<500
B-409	LL_B-409-3_100711	10/7/11	2.5	3	Area 2	UG/KG	15000
B-409	LL_B-409-6_100711	10/7/11	5.5	6	Area 2	UG/KG	2200
B-409	LL_B-409-9_100711	10/7/11	8.5	9	Area 2	UG/KG	4800
B-410	LL_B-410-1_100711	10/7/11	0.5	1	Area 2	UG/KG	6300
B-410	LL_B-410-3_100711	10/7/11	2.5	3	Area 2	UG/KG	8300
B-410	LL_B-410-6_100711	10/7/11	5.5	6	Area 2	UG/KG	<500
B-410	LL_B-410-9_100711	10/7/11	8.5	9	Area 2	UG/KG	28000
B-411	LL_B-411-1_100611	10/6/11	0.5	1	Area 1	UG/KG	980
B-411	LL_B-411-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<500
B-411	LL_B-411-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<500
B-411	LL_B-411-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<500
B-412	LL_B-412-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<500
B-412	LL_B-412-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<500
B-412	LL_B-412-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<500
B-412	LL_B-412-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<500
B-413	LL_B-413-1_100611	10/6/11	0.5	1	Area 1	UG/KG	4400
B-413	LL_B-413-3_100611	10/6/11	2.5	3	Area 1	UG/KG	3900
B-413	LL_B-413-6_100611	10/6/11	5.5	6	Area 1	UG/KG	8800
B-413	LL_B-413-9_100611	10/6/11	8.5	9	Area 1	UG/KG	5600
B-414	LL_B-414-1_100611	10/6/11	0.5	1	Area 1	UG/KG	2000
B-414	LL_B-414-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<500
B-414	LL_B-414-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<500
B-414	LL_B-414-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<500
B-415	LL_B-415-1_100611	10/6/11	0.5	1	Area 1	UG/KG	34000
B-415	LL_B-415-3_100611	10/6/11	2.5	3	Area 1	UG/KG	55000
B-415	LL_B-415-6_100611	10/6/11	5.5	6	Area 1	UG/KG	23000
B-415	LL_B-415-9_100611	10/6/11	8.5	9	Area 1	UG/KG	12000
B-416	LL_B-416-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<500
B-416	LL_B-416-3_100611	10/6/11	2.5	3	Area 1	UG/KG	730
B-416	LL_B-416-6_100611	10/6/11	5.5	6	Area 1	UG/KG	42000
B-416	LL_B-416-9_100611	10/6/11	8.5	9	Area 1	UG/KG	530000
B-417	LL_B-417-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<500
B-417	LL_B-417-3_100611	10/6/11	2.5	3	Area 1	UG/KG	47000
B-417	LL_B-417-6_100611	10/6/11	5.5	6	Area 1	UG/KG	12000
B-417	LL_B-417-9_100611	10/6/11	8.5	9	Area 1	UG/KG	44000
B-418	LL_B-418-1_100611	10/6/11	0.5	1	Area 1	UG/KG	22000
B-418	LL_B-418-3_100611	10/6/11	2.5	3	Area 1	UG/KG	6000
B-418	LL_B-418-6_100611	10/6/11	5.5	6	Area 1	UG/KG	38000
B-418	LL_B-418-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<500
B-419	LL_B-419-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<500
B-419	LL_B-419-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<500
B-419	LL_B-419-6_100611	10/6/11	5.5	6	Area 1	UG/KG	980
B-419	LL_B-419-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<500
B-420	LL_B-420-1_100611	10/6/11	0.5	1	Area 1	UG/KG	880
B-420	LL_B-420-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<500
B-420	LL_B-420-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<500
B-420	LL_B-420-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<500
B-421	LL_B-421-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<500
B-421	LL_B-421-3_100511	10/5/11	2.5	3	Area 3	UG/KG	790
B-421	LL_B-421-6_100511	10/5/11	5.5	6	Area 3	UG/KG	760
B-421	LL_B-421-9_100511	10/5/11	8.5	9	Area 3	UG/KG	670
B-422	LL_B-422-1_100511	10/5/11	0.5	1	Area 3	UG/KG	50000
B-422	LL_B-422-3_100511	10/5/11	2.5	3	Area 3	UG/KG	1200000
B-422	LL_B-422-6_100611	10/6/11	5.5	6	Area 3	UG/KG	130000
B-422	LL_B-422-9_100611	10/6/11	8.5	9	Area 3	UG/KG	150000
B-423	LL_B-423-1_100711	10/7/11	0.5	1	Area 3	UG/KG	170000
B-423	LL_B-423-3_100711	10/7/11	2.5	3	Area 3	UG/KG	3500000

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
B-423	LL_B-423-6_100711	10/7/11	5.5	6	Area 3	UG/KG	88000
B-423	LL_B-423-9_100711	10/7/11	8.5	9	Area 3	UG/KG	15000
B-424	LL_B-424-1_100511	10/5/11	0.5	1	Area 3	UG/KG	520
B-424	LL_B-424-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<500
B-424	LL_B-424-6_100511	10/5/11	5.5	6	Area 3	UG/KG	1300
B-424	LL_B-424-9_100511	10/5/11	8.5	9	Area 3	UG/KG	45000
B-425	LL_B-425-1_100511	10/5/11	0.5	1	Area 3	UG/KG	7400
B-425	LL_B-425-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<500
B-425	LL_B-425-6_100511	10/5/11	5.5	6	Area 3	UG/KG	2400
B-425	LL_B-425-9_100511	10/5/11	8.5	9	Area 3	UG/KG	3600
B-426	LL_B-426-1_100511	10/5/11	0.5	1	Area 3	UG/KG	42000
B-426	LL_B-426-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<500
B-426	LL_B-426-6_100511	10/5/11	5.5	6	Area 3	UG/KG	86000
B-426	LL_B-426-9_100511	10/5/11	8.5	9	Area 3	UG/KG	59000
B-427	LL_B-427-1_100511	10/5/11	0.5	1	Area 3	UG/KG	1300000
B-427	LL_B-427-3_100511	10/5/11	2.5	3	Area 3	UG/KG	6200
B-427	LL_B-427-6_100511	10/5/11	5.5	6	Area 3	UG/KG	4200
B-427	LL_B-427-9_100511	10/5/11	8.5	9	Area 3	UG/KG	1700
B-428	LL_B-428-1_100511	10/5/11	0.5	1	Area 3	UG/KG	30000
B-428	LL_B-428-3_100511	10/5/11	2.5	3	Area 3	UG/KG	21000
B-428	LL_B-428-6_100511	10/5/11	5.5	6	Area 3	UG/KG	830000
B-428	LL_B-428-9_100511	10/5/11	8.5	9	Area 3	UG/KG	420000
B-429	LL_B-429-1_100511	10/5/11	0.5	1	Area 3	UG/KG	<500
B-429	LL_B-429-3_100511	10/5/11	2.5	3	Area 3	UG/KG	1800
B-429	LL_B-429-6_100511	10/5/11	5.5	6	Area 3	UG/KG	580
B-429	LL_B-429-9_100511	10/5/11	8.5	9	Area 3	UG/KG	600
B-430	LL_B-430-1_100511	10/5/11	0.5	1	Area 3	UG/KG	92000
B-430	LL_B-430-3_100511	10/5/11	2.5	3	Area 3	UG/KG	44000
B-430	LL_B-430-6_100511	10/5/11	5.5	6	Area 3	UG/KG	36000
B-430	LL_B-430-9_100511	10/5/11	8.5	9	Area 3	UG/KG	34000
S001	S001-0"	12/4/07	0	0.5	Area 4	UG/KG	<110
S002	S002-0"	12/4/07	0	0.5	Area 4	UG/KG	<300
S003ALT	S003ALT-0"	12/20/07	0	0.5	Area 4	UG/KG	<270
S004	S004-0"	1/4/08	0	0.5	Area 4	UG/KG	300
S004	S004-12"	1/4/08	1	1.5	Area 4	UG/KG	210
S005	S005-0"	12/18/07	0	0.5	Area 4	UG/KG	<240
S006	S006-0"	12/17/07	0	0.5	Area 4	UG/KG	<280
S006	S006-12"	12/17/07	1	1.5	Area 4	UG/KG	<280
S007	S007-0"	12/17/07	0	0.5	Area 4	UG/KG	97000
S008	S008-0"	12/17/07	0	0.5	Area 4	UG/KG	<260
S009	S009-0"	12/17/07	0	0.5	Area 4	UG/KG	<250
S009	S009-12"	12/17/07	1	1.5	Area 4	UG/KG	3100
S010	S010-6''	1/19/09	0.5	1	Area 4	UG/KG	<340
S011	S011-0"	12/17/07	0	0.5	Area 4	UG/KG	380000
S011	S011-12"	12/17/07	1	1.5	Area 4	UG/KG	1200000
S012	S012B-0"	12/18/07	0	0.5	Area 4	UG/KG	7000
S013	S013-0"	1/4/08	0	0.5	Area 4	UG/KG	23000
S014	S014-0"	12/4/07	0	0.5	Area 4	UG/KG	<240
S015	S015-0"	12/4/07	0	0.5	Area 4	UG/KG	<120
S016	S016B-0"	1/2/08	0	0.5	Area 4	UG/KG	40900
S016	S016B-12"	1/2/08	1	1.5	Area 4	UG/KG	220
S017	S017-0"	12/4/07	0	0.5	Area 4	UG/KG	<220
S018	S018-0"	12/20/07	0	0.5	Area 4	UG/KG	310000
S019	S019-0"	12/18/07	0	0.5	Area 4	UG/KG	<260
S020	S020-0"	12/18/07	0	0.5	Area 4	UG/KG	180000
S020	S020-12"	12/18/07	1	1.5	Area 4	UG/KG	2100000
S021	S021-6''	1/19/09	0.5	1	Area 4	UG/KG	1500
S022	S022-0"	12/17/07	0	0.5	Area 4	UG/KG	<250
S023	S023-0"	12/17/07	0	0.5	Area 3	UG/KG	<310
S024	S024-0"	12/17/07	0	0.5	Area 3	UG/KG	<240
S025	S025-0"	12/18/07	0	0.5	Area 3	UG/KG	120000
S025	S025-12"	12/18/07	1	1.5	Area 3	UG/KG	2400
S026	S026-0"	12/18/07	0	0.5	Area 3	UG/KG	200000
S026	S026-12"	12/18/07	1	1.5	Area 3	UG/KG	1400000
S027	S027-0"	12/20/07	0	0.5	Area 3	UG/KG	1300000
S028	S028-0"	12/4/07	0	0.5	Area 3	UG/KG	<330
S029	S029-0"	12/4/07	0	0.5	Area 3	UG/KG	850000

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
S029	S029-18"	12/4/07	1.5	2	Area 3	UG/KG	370000
S030	S030-12"	12/4/07	1	1.5	Area 3	UG/KG	160000
S031	S031-0"	12/4/07	0	0.5	Area 3	UG/KG	<270
S032	S032-0"	12/4/07	0	0.5	Area 3	UG/KG	<120
S033	S033-0"	12/4/07	0	0.5	Area 3	UG/KG	<210
S034	S034-0"	12/4/07	0	0.5	Area 3	UG/KG	<150
S035	S035-0"	12/4/07	0	0.5	Area 3	UG/KG	<260
S036	S036-0"	12/4/07	0	0.5	Area 3	UG/KG	<270
S037	S037-0"	12/4/07	0	0.5	Area 3	UG/KG	5800000
S037	S037-20"	12/4/07	1.67	2.167	Area 3	UG/KG	3600000
S038	S038-0"	12/20/07	0	0.5	Area 3	UG/KG	<250
S039	S039-0"	1/2/08	0	0.5	Area 3	UG/KG	400000
S039	S039-12"	1/2/08	1	1.5	Area 3	UG/KG	160000
S040	S040-0"	12/20/07	0	0.5	Area 3	UG/KG	170000
S040	S040-12"	12/20/07	1	1.5	Area 3	UG/KG	170000
S041	S041-0"	1/30/08	0	0.5	Area 3	UG/KG	7600
S042	S042-0"	1/30/08	0	0.5	Area 3	UG/KG	270000
S042	S042-12"	1/30/08	1	1.5	Area 3	UG/KG	420000
S043	S043-0"	1/30/08	0	0.5	Area 3	UG/KG	430000
S044	S044-0"	12/20/07	0	0.5	Area 3	UG/KG	<320
S045	S045-0"	12/20/07	0	0.5	Area 3	UG/KG	220000
S046	S046-0"	12/20/07	0	0.5	Area 3	UG/KG	20000
S047	S047-6"	1/20/09	0.5	1	Area 3	UG/KG	1620000
S048	S048-0"	1/7/08	0	0.5	Area 3	UG/KG	88200
S049	S049-6"	1/20/09	0.5	1	Area 3	UG/KG	<290
S050	S050-0"	12/4/07	0	0.5	Area 3	UG/KG	<160
S051	S051-0"	12/20/07	0	0.5	Area 3	UG/KG	54000
S052	S052-0"	12/20/07	0	0.5	Area 3	UG/KG	120000
S052	S052-12"	12/20/07	1	1.5	Area 3	UG/KG	440000
S053	S053-0"	12/20/07	0	0.5	Area 3	UG/KG	54000
S053	S053-12"	12/20/07	1	1.5	Area 3	UG/KG	63000
S054	S054-0"	1/30/08	0	0.5	Area 3	UG/KG	214100
S055	S055-0"	1/30/08	0	0.5	Area 3	UG/KG	7900
S055	S055-12"	1/30/08	1	1.5	Area 3	UG/KG	2000
S056	S056-0"	1/30/08	0	0.5	Area 3	UG/KG	<250
S056	S056-12"	1/30/08	1	1.5	Area 3	UG/KG	25000
S057	S057-0"	1/30/08	0	0.5	Area 3	UG/KG	<250
S058	S058-0"	2/1/08	0	0.5	Area 3	UG/KG	23000
S059	S059-0"	2/1/08	0	0.5	Area 3	UG/KG	<270
S059	S059-12"	2/1/08	1	1.5	Area 3	UG/KG	<250
S060	S060-0"	12/13/07	0	0.5	Area 3	UG/KG	4700
S060	S060-18"	12/13/07	1.5	2	Area 3	UG/KG	744100
S061	S061-0"	12/13/07	0	0.5	Area 3	UG/KG	<290
S063	S063-0"	12/14/07	0	0.5	Area 3	UG/KG	<290
S064	S064-0"	12/14/07	0	0.5	Area 3	UG/KG	<260
S064	S064-18"	12/14/07	1.5	2	Area 3	UG/KG	1600
S065	S065-0"	2/1/08	0	0.5	Area 3	UG/KG	<220
S065	S065-12"	2/1/08	1	1.5	Area 3	UG/KG	<240
S066	S066-0"	12/14/07	0	0.5	Area 3	UG/KG	<280
S067	S067-0"	12/14/07	0	0.5	Area 3	UG/KG	<270
S068	S068-0"	12/13/07	0	0.5	Area 3	UG/KG	<290
S069	S069-0"	12/13/07	0	0.5	Area 3	UG/KG	<260
S070	S070-0"	12/13/07	0	0.5	Area 3	UG/KG	<280
S071B	S071B-12"	12/21/07	1	1.5	Area 3	UG/KG	17000
S072	S072-0"	12/4/07	0	0.5	Area 3	UG/KG	<170
S073	S073-0"	12/4/07	0	0.5	Area 3	UG/KG	<180
S074	S074-0"	12/4/07	0	0.5	Area 3	UG/KG	<130
S075	S075-0"	12/4/07	0	0.5	Area 3	UG/KG	<210
S076	S076-6''	1/22/09	0.5	1	Area 3	UG/KG	36600
S078	S078-0"	2/1/08	0	0.5	Area 3	UG/KG	150000
S078	S078-12"	2/1/08	1	1.5	Area 3	UG/KG	27000
S079	S079-0"	2/1/08	0	0.5	Area 3	UG/KG	1900
S080	S080-0"	2/1/08	0	0.5	Area 3	UG/KG	3800
S081	S081-0"	2/1/08	0	0.5	Area 3	UG/KG	<280
S082	S082-0"	12/13/07	0	0.5	Area 3	UG/KG	<240
S083	S083-0"	12/13/07	0	0.5	Area 3	UG/KG	3400
S083	S083-15"	12/13/07	1.25	1.75	Area 3	UG/KG	620

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
S084	S084-0"	12/4/07	0	0.5	Area 3	UG/KG	<350
S085	S085-0"	12/4/07	0	0.5	Area 3	UG/KG	<270
S086	S086-6"	1/20/09	0.5	1	Area 3	UG/KG	1400
S087	S087-0"	12/13/07	0	0.5	Area 3	UG/KG	<230
S088	S088-0"	1/2/08	0	0.5	Area 3	UG/KG	220
S089	S089-0"	1/2/08	0	0.5	Area 3	UG/KG	<230
S090	S090-0"	12/13/07	0	0.5	Area 3	UG/KG	8000
S090	S090-18"	12/13/07	1.5	2	Area 3	UG/KG	1400
S091	S091-0"	2/1/08	0	0.5	Area 3	UG/KG	52000
S092	S092-0"	12/13/07	0	0.5	Area 3	UG/KG	<290
S093	S093-0"	12/4/07	0	0.5	Area 3	UG/KG	<190
S094	S094-0"	12/4/07	0	0.5	Area 3	UG/KG	<230
S095	S095-0"	12/4/07	0	0.5	Area 3	UG/KG	<270
S096	S096-0"	12/4/07	0	0.5	Area 3	UG/KG	<180
S097	S097-6"	1/20/09	0.5	1	Area 3	UG/KG	<320
S098	S098-0"	12/4/07	0	0.5	Area 3	UG/KG	<220
S099	S099-0"	12/13/07	0	0.5	Area 3	UG/KG	<230
S100	S100-0"	12/13/07	0	0.5	Area 3	UG/KG	<290
S101	S101-0"	12/13/07	0	0.5	Area 3	UG/KG	<280
S102	S102-0"	12/13/07	0	0.5	Area 3	UG/KG	<240
S102	S102-15"	12/13/07	1.25	1.75	Area 3	UG/KG	<250
S103	S103-0"	1/3/08	0	0.5	Area 2	UG/KG	<220
S103	S103-12"	1/3/08	1	1.5	Area 2	UG/KG	<230
S104	S104-0"	1/29/08	0	0.5	Area 2	UG/KG	<240
S105	S105-0"	1/31/08	0	0.5	Area 2	UG/KG	550
S106	S106-6''	1/22/09	0.5	1	Area 2	UG/KG	<280
S106	S106-12''	1/22/09	1	1.5	Area 2	UG/KG	<260
S107	S107-0"	12/20/07	0	0.5	Area 2	UG/KG	<270
S108	S108-0"	12/20/07	0	0.5	Area 2	UG/KG	<210
S109	S109-0"	1/31/08	0	0.5	Area 2	UG/KG	2000000
S109	S109-12"	1/31/08	1	1.5	Area 2	UG/KG	1900000
S110	S110-6''	1/22/09	0.5	1	Area 2	UG/KG	5400
S111	S111-0"	12/21/07	0	0.5	Area 2	UG/KG	2800000
S111	S111-12"	12/21/07	1	1.5	Area 2	UG/KG	1500000
S112	S112-6''	1/22/09	0.5	1	Area 2	UG/KG	130000
S113	S113-0"	1/31/08	0	0.5	Area 2	UG/KG	1200000
S113	S113-12"	1/31/08	1	1.5	Area 2	UG/KG	3400000
S114	S114-0"	1/29/08	0	0.5	Area 2	UG/KG	<220
S115	S115-0"	1/29/08	0	0.5	Area 2	UG/KG	340
S116	S116-0"	1/29/08	0	0.5	Area 2	UG/KG	1700
S117	S117-0"	1/31/08	0	0.5	Area 2	UG/KG	690
S117	S117-12"	2/1/08	1	1.5	Area 2	UG/KG	<230
S118	S118-6''	1/22/09	0.5	1	Area 2	UG/KG	300
S119	S119-0"	1/4/08	0	0.5	Area 2	UG/KG	3900000
S119	S119-12"	1/4/08	1	1.5	Area 2	UG/KG	4270000
S120	S120-0"	1/4/08	0	0.5	Area 2	UG/KG	39000
S121	S121-0"	1/4/08	0	0.5	Area 2	UG/KG	120000
S121	S121-12"	1/4/08	1	1.5	Area 2	UG/KG	340000
S122	S122-0"	1/29/08	0	0.5	Area 1	UG/KG	<960
S123	S123-0"	11/29/07	0	0.5	Area 1	UG/KG	<160
S124	S124-0"	11/29/07	0	0.5	Area 1	UG/KG	<190
S125	S125-0"	1/29/08	0	0.5	Area 1	UG/KG	<260
S126	S126-0"	1/7/08	0	0.5	Area 1	UG/KG	<210
S126	S126-12"	1/7/08	1	1.5	Area 1	UG/KG	<390
S127	S127-0"	2/1/08	0	0.5	Area 3	UG/KG	<290
S130	S130-0"	1/7/08	0	0.5	Area 3	UG/KG	27000
S130	S130-12"	1/7/08	1	1.5	Area 3	UG/KG	120000
S131	S131-0"	1/7/08	0	0.5	Area 1	UG/KG	9200
S132	S132-0"	1/3/08	0	0.5	Area 1	UG/KG	1800
S133	S133B-0"	11/29/07	0	0.5	Area 1	UG/KG	28000
S133	S133B-12"	11/29/07	1	1.5	Area 1	UG/KG	<210
S134	S134-0"	1/7/08	0	0.5	Area 1	UG/KG	<230
S135	S135-6''	1/19/09	0.5	1	Area 1	UG/KG	<240
S136	S136-0"	11/29/07	0	0.5	Area 1	UG/KG	190000
S136	S136-24"	11/29/07	2	2.5	Area 1	UG/KG	45000
S137	S137-0"	11/29/07	0	0.5	Area 1	UG/KG	<130
S138	S138-0"	11/29/07	0	0.5	Area 1	UG/KG	55000

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
S138	S138-18"	11/29/07	1.5	2	Area 1	UG/KG	461000
S139	S139-12"	11/29/07	1	1.5	Area 1	UG/KG	26000
S139	S139-24"	11/29/07	2	2.5	Area 1	UG/KG	280000
S140	S140-12"	11/29/07	1	1.5	Area 1	UG/KG	320
S141	S141-0"	1/7/08	0	0.5	Area 3	UG/KG	19000
S141	S141-12"	1/7/08	1	1.5	Area 3	UG/KG	1900
S142	S142-0"	1/7/08	0	0.5	Area 3	UG/KG	24000
S143	S143-0"	1/7/08	0	0.5	Area 3	UG/KG	150
S144B	S144B-0"	1/31/08	0	0.5	Area 3	UG/KG	<250
S144B	S144B-12"	1/31/08	1	1.5	Area 3	UG/KG	<280
S145	S145-0"	1/7/08	0	0.5	Area 3	UG/KG	<200
S145	S145-12"	1/7/08	1	1.5	Area 3	UG/KG	55000
S146	S146-0"	11/29/07	0	0.5	Area 1	UG/KG	210
S147	S147-12"	11/29/07	1	1.5	Area 1	UG/KG	760
S148	S148-0"	11/29/07	0	0.5	Area 1	UG/KG	1300
S149	S149-12"	11/29/07	1	1.5	Area 1	UG/KG	<190
S150	S150-12"	11/29/07	1	1.5	Area 1	UG/KG	7900
S151	S151-12"	11/29/07	1	1.5	Area 1	UG/KG	<160
S152	S152-0"	11/29/07	0	0.5	Area 1	UG/KG	<200
S153	S153-0"	11/29/07	0	0.5	Area 1	UG/KG	<180
S154	S154-0"	11/29/07	0	0.5	Area 1	UG/KG	<270
S155	S155B-0"	11/29/07	0	0.5	Area 1	UG/KG	<140
S156	S156-0"	1/7/08	0	0.5	Area 3	UG/KG	<560
S157	S157-0"	1/2/08	0	0.5	Area 3	UG/KG	<150
S158	S158-0"	12/17/07	0	0.5	Area 3	UG/KG	<230
S158	S158-12"	12/17/07	1	1.5	Area 3	UG/KG	200000
S159	S159-0"	12/17/07	0	0.5	Area 3	UG/KG	<250
S160	S160-0"	1/7/08	0	0.5	Area 3	UG/KG	<150
S161	S161B-0"	11/29/07	0	0.5	Area 1	UG/KG	<180
S162	S162-12"	11/29/07	1	1.5	Area 1	UG/KG	40800
S162	S162-24"	11/29/07	2	2.5	Area 1	UG/KG	<150
S163	S163-0"	11/29/07	0	0.5	Area 1	UG/KG	240
S164	S164-0"	11/29/07	0	0.5	Area 1	UG/KG	33100
S165	S165-0"	11/29/07	0	0.5	Area 1	UG/KG	<190
S166	S166-0"	11/29/07	0	0.5	Area 1	UG/KG	<110
S167	S167-0"	11/29/07	0	0.5	Area 1	UG/KG	<200
S168	S168-0"	11/29/07	0	0.5	Area 1	UG/KG	<150
S169	S169-0"	11/29/07	0	0.5	Area 1	UG/KG	96000
S170	S170-0"	1/7/08	0	0.5	Area 3	UG/KG	<330
S171	S171-0"	12/17/07	0	0.5	Area 3	UG/KG	<310
S171	S171-12"	12/17/07	1	1.5	Area 3	UG/KG	<570
S172	S172-0"	12/17/07	0	0.5	Area 3	UG/KG	99000
S173	S173-0"	12/17/07	0	0.5	Area 3	UG/KG	<260
S174	S174-0"	12/14/07	0	0.5	Area 3	UG/KG	<280
S175A	S175A-0"	1/7/08	0	0.5	Area 3	UG/KG	54000
S175B	S175B-0"	1/31/08	0	0.5	Area 3	UG/KG	15000
S176	S176-0"	11/28/07	0	0.5	Area 1	UG/KG	<140
S177	S177-0"	11/28/07	0	0.5	Area 1	UG/KG	<150
S178	S178-0"	11/28/07	0	0.5	Area 1	UG/KG	<130
S179	S179-0"	11/28/07	0	0.5	Area 1	UG/KG	<180
S180	S180-0"	11/28/07	0	0.5	Area 1	UG/KG	2620
S181	S181-0"	1/31/08	0	0.5	Area 3	UG/KG	<270
S182	S182-0"	12/14/07	0	0.5	Area 3	UG/KG	<350
S183	S183-0"	12/17/07	0	0.5	Area 3	UG/KG	<180
S184	S184-0"	12/14/07	0	0.5	Area 3	UG/KG	170000
S185	S185-6''	1/19/09	0.5	1	Area 3	UG/KG	<280
S186	S186-0"	1/31/08	0	0.5	Area 3	UG/KG	<240
S187	S187-0"	1/4/08	0	0.5	Area 1	UG/KG	<210
S188	S188-0"	11/26/07	0	0.5	Area 1	UG/KG	<100
S189	S189-0"	11/26/07	0	0.5	Area 1	UG/KG	<250
S190	S190-0"	11/26/07	0	0.5	Area 1	UG/KG	<260
S191	S191-0"	11/26/07	0	0.5	Area 1	UG/KG	<130
S192	S192-0"	11/26/07	0	0.5	Area 1	UG/KG	<280
S193	S193-0"	11/26/07	0	0.5	Area 1	UG/KG	<250
S194	S194-0"	11/26/07	0	0.5	Area 1	UG/KG	<280
S195	S195-0"	11/26/07	0	0.5	Area 1	UG/KG	<280
S196	S196-0"	11/26/07	0	0.5	Area 1	UG/KG	95000

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
S196	S196-18"	11/26/07	1.5	2	Area 1	UG/KG	580000
S197	S197-0"	11/26/07	0	0.5	Area 1	UG/KG	<270
S198	S198-0"	11/26/07	0	0.5	Area 1	UG/KG	<150
S199	S199-12"	11/26/07	1	1.5	Area 1	UG/KG	28600
S199	S199-24"	11/26/07	2	2.5	Area 1	UG/KG	18000
S200	S200-0"	11/26/07	0	0.5	Area 1	UG/KG	<120
S201	S201-0"	11/26/07	0	0.5	Area 1	UG/KG	39000
S201	S201-18"	11/26/07	1.5	2	Area 1	UG/KG	56000
S202	S202-0"	11/28/07	0	0.5	Area 1	UG/KG	<230
S203	S203-0"	11/28/07	0	0.5	Area 1	UG/KG	<170
S204	S204-0"	11/28/07	0	0.5	Area 1	UG/KG	<220
S205	S205-0"	11/28/07	0	0.5	Area 1	UG/KG	<210
S206	S206-0"	11/28/07	0	0.5	Area 1	UG/KG	<150
S207	S207-0"	11/28/07	0	0.5	Area 1	UG/KG	<140
S208	S208-0"	11/26/07	0	0.5	Area 1	UG/KG	30000
S209	S209-0"	11/26/07	0	0.5	Area 1	UG/KG	<130
S210	S210-0"	11/26/07	0	0.5	Area 1	UG/KG	<120
S211	S211-0"	11/26/07	0	0.5	Area 1	UG/KG	<130
S212	S212-0"	11/26/07	0	0.5	Area 1	UG/KG	<240
S213	S213-0"	11/28/07	0	0.5	Area 1	UG/KG	14000
S214	S214-0"	11/28/07	0	0.5	Area 1	UG/KG	<130
S215	S215-0"	11/28/07	0	0.5	Area 1	UG/KG	213300
S216	S216-0"	11/28/07	0	0.5	Area 1	UG/KG	<210
S217	S217-0"	11/28/07	0	0.5	Area 1	UG/KG	<160
S218	S218-0"	11/28/07	0	0.5	Area 1	UG/KG	<240
S219	S219-0"	11/28/07	0	0.5	Area 1	UG/KG	<180
S220	S220-0"	11/28/07	0	0.5	Area 1	UG/KG	<160
S221	S221-0"	11/28/07	0	0.5	Area 1	UG/KG	<160
S222	S222-0"	11/28/07	0	0.5	Area 1	UG/KG	<160
S223	S223-0"	11/28/07	0	0.5	Area 1	UG/KG	<140
S224	S224-0"	11/28/07	0	0.5	Area 1	UG/KG	7600
S225	S225-0"	11/28/07	0	0.5	Area 1	UG/KG	2400
S226	S226-0"	11/28/07	0	0.5	Area 1	UG/KG	<190
S227	S227-0"	11/29/07	0	0.5	Area 1	UG/KG	<210
S228	S228-0"	11/28/07	0	0.5	Area 1	UG/KG	<190
S229	S229-0"	11/28/07	0	0.5	Area 1	UG/KG	210
S230	S230-0"	11/28/07	0	0.5	Area 1	UG/KG	<220
S230	S230-12"	11/28/07	1	1.5	Area 1	UG/KG	<160
S231	S231-0"	11/28/07	0	0.5	Area 1	UG/KG	<140
S232	S232-0"	11/28/07	0	0.5	Area 1	UG/KG	<150
S233	S233-0"	11/28/07	0	0.5	Area 1	UG/KG	<230
S234	S234-0"	11/28/07	0	0.5	Area 1	UG/KG	<180
S235	S235-0"	11/28/07	0	0.5	Area 1	UG/KG	<160
S236	S236-0"	11/28/07	0	0.5	Area 1	UG/KG	360
S237	S237-0"	11/29/07	0	0.5	Area 1	UG/KG	<240
S238	S238-0"	1/28/08	0	0.5	Area 2	UG/KG	<280
S239	S239-0"	1/28/08	0	0.5	Area 2	UG/KG	<580
S239	S239-12"	1/30/08	1	1.5	Area 2	UG/KG	<320
S240	S240-6"	1/20/09	0.5	1	Area 2	UG/KG	<330
S241	S241-6"	1/20/09	0.5	1	Area 2	UG/KG	<300
S242	S242-0"	1/29/08	0	0.5	Area 2	UG/KG	<260
S243	S243-0"	1/29/08	0	0.5	Area 2	UG/KG	<260
S244	S244-0"	1/28/08	0	0.5	Area 2	UG/KG	<270
S245	S245-0"	1/28/08	0	0.5	Area 2	UG/KG	<290
S246	S246-0"	1/29/08	0	0.5	Area 2	UG/KG	<250
S247	S247-0"	1/29/08	0	0.5	Area 2	UG/KG	<250
S248	S248-0"	1/28/08	0	0.5	Area 2	UG/KG	<250
S249	S249-0"	1/28/08	0	0.5	Area 2	UG/KG	<270
S250	S250-0"	1/28/08	0	0.5	Area 2	UG/KG	<250
S250	S250-12"	1/30/08	1	1.5	Area 2	UG/KG	1500
S251	S251-0"	1/28/08	0	0.5	Area 2	UG/KG	<360
S251	S251-6"	1/20/09	0.5	1	Area 2	UG/KG	<260
S252	S252-0"	1/29/08	0	0.5	Area 2	UG/KG	300
S253	S253-0"	1/29/08	0	0.5	Area 2	UG/KG	15400
S254	S254-0"	1/29/08	0	0.5	Area 2	UG/KG	<250
S254	S254-12"	1/30/08	1	1.5	Area 2	UG/KG	<220
S255	S255-0"	1/29/08	0	0.5	Area 2	UG/KG	<230

Table A6
Results of TPHg Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Gasoline Range Organics
S256	S256-0"	1/31/08	0	0.5	Area 2	UG/KG	<240
S257	S257-0"	1/3/08	0	0.5	Area 2	UG/KG	<200
S258	S258-0"	1/3/08	0	0.5	Area 2	UG/KG	<190
S259	S259-0"	1/31/08	0	0.5	Area 2	UG/KG	<290
S260	S260-0"	1/3/08	0	0.5	Area 2	UG/KG	<250
S261	S261-0"	12/21/07	0	0.5	Area 3	UG/KG	<250
S262	S262-0"	12/13/07	0	0.5	Area 3	UG/KG	<250
S263	S263-0"	2/1/08	0	0.5	Area 3	UG/KG	<250
S264	S264-0"	1/3/08	0	0.5	Area 3	UG/KG	<250
S264	S264-12"	1/3/08	1	1.5	Area 3	UG/KG	62000
S265	S265-6"	1/20/09	0.5	1	Area 3	UG/KG	<360
S266	S266-0"	12/14/07	0	0.5	Area 3	UG/KG	<240
S267	S267-0"	1/4/08	0	0.5	Area 3	UG/KG	150000
S268	S268-0"	1/2/08	0	0.5	Area 3	UG/KG	29000
S268	S268-12"	1/2/08	1	1.5	Area 3	UG/KG	320000
S269	S269-0"	12/4/07	0	0.5	Area 3	UG/KG	<170
S270	S270-0"	12/17/07	0	0.5	Area 4	UG/KG	<340
S271	S271-0"	1/4/08	0	0.5	Area 1	UG/KG	<210
S272	S272-0"	11/28/07	0	0.5	Area 1	UG/KG	<95
S273	S273-0"	11/28/07	0	0.5	Area 1	UG/KG	<220
S274	S274-0"	11/29/07	0	0.5	Area 1	UG/KG	76000
S274	S274-12"	11/29/07	1	1.5	Area 1	UG/KG	610
S275	S275-0"	11/29/07	0	0.5	Area 3	UG/KG	24000
S275	S275-12"	11/29/07	1	1.5	Area 3	UG/KG	33000
S276	S276-0"	11/29/07	0	0.5	Area 1	UG/KG	<270
S277	S277-0"	1/31/08	0	0.5	Area 2	UG/KG	<280
S278	S278-0"	1/31/08	0	0.5	Area 2	UG/KG	<230
S279	S279-0"	12/20/07	0	0.5	Area 2	UG/KG	<250
S279	S279-12"	12/20/07	1	1.5	Area 2	UG/KG	<250
S280	S280-0"	1/3/08	0	0.5	Area 2	UG/KG	710
S281	S281-0"	2/1/08	0	0.5	Area 2	UG/KG	<250
S282	S282-6"	1/20/09	0.5	1	Area 2	UG/KG	<360
S282	S282-12"	1/20/09	1	1.5	Area 2	UG/KG	<370
S283	S283-0"	1/29/08	0	0.5	Area 2	UG/KG	<270
S284	S284-0"	1/29/08	0	0.5	Area 2	UG/KG	<240
S284	S284-12"	1/30/08	1	1.5	Area 2	UG/KG	<140
S285	S285-0"	11/28/07	0	0.5	Area 1	UG/KG	<180
S286	S286-0"	11/26/07	0	0.5	Area 1	UG/KG	<590
S287	S287-0"	11/26/07	0	0.5	Area 1	UG/KG	86000
S287	S287-12"	11/26/07	1	1.5	Area 1	UG/KG	27000
S288	S288-0"	11/26/07	0	0.5	Area 1	UG/KG	<310
S289	S289-0"	11/26/07	0	0.5	Area 1	UG/KG	<110
S290	S290-0"	11/26/07	0	0.5	Area 1	UG/KG	<110
S291	S291-0"	1/7/08	0	0.5	Area 4	UG/KG	<210
S292	S292-6"	1/19/09	0.5	1	Area 1	UG/KG	<320
S293	S293-0"	11/26/07	0	0.5	Area 1	UG/KG	69200
S293	S293-24"	11/26/07	2	2.5	Area 1	UG/KG	400
S294	S294-0"	11/26/07	0	0.5	Area 1	UG/KG	<140
S295	S295-6"	11/26/07	0.5	1	Area 1	UG/KG	56000
S296	S296-0"	11/28/07	0	0.5	Area 1	UG/KG	<150
S296	S296-18"	11/28/07	1.5	2	Area 1	UG/KG	4700
S297	S297-6"	1/20/09	0.5	1	Area 3	UG/KG	<290
S297	S297-12"	1/20/09	1	1.5	Area 3	UG/KG	<300
S298	S298-0	12/4/07	0	0.5	Area 4	UG/KG	110000
VE1	LL_VE1_10_052611_01	5/26/11	9.5	10	Area 3	UG/KG	1200

Notes
UG/KG micrograms per kilogram

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
B001	B001-2	12/5/05	2	3	Area 1	UG/KG	<37500
B001	B001-5	12/5/05	5	6	Area 1	UG/KG	3750
B001	B001-10	12/5/05	10	11	Area 1	UG/KG	5375
B002	B002-2	12/5/05	2	3	Area 1	UG/KG	5000
B002	B002-5	12/5/05	5	6	Area 1	UG/KG	<37500
B002	B002-10	12/5/05	10	11	Area 1	UG/KG	<3750
B003	B003-2	12/7/05	2	3	Area 1	UG/KG	<3750
B003	B003-5	12/7/05	5	6	Area 1	UG/KG	366250
B004	B004-2	12/8/05	2	3	Area 1	UG/KG	<18750
B004	B004-5	12/8/05	5	6	Area 1	UG/KG	<3750
B004	B004-10	12/8/05	10	11	Area 1	UG/KG	<3750
B005	B005-2	12/8/05	2	3	Area 1	UG/KG	4625
B005	B005-5	12/8/05	5	6	Area 1	UG/KG	<3750
B005	B005-10	12/8/05	10	11	Area 1	UG/KG	<3750
B006	B006-2	12/12/05	2	3	Area 1	UG/KG	<3750
B006	B006-5	12/12/05	5	6	Area 1	UG/KG	<3750
B006	B006-10	12/12/05	10	11	Area 1	UG/KG	<3750
B007	B007-2	12/12/05	2	3	Area 1	UG/KG	<3750
B007	B007-5	12/12/05	5	6	Area 1	UG/KG	<3750
B007	B007-10	12/12/05	10	11	Area 1	UG/KG	<3750
B008	B008-2	12/8/05	2	3	Area 1	UG/KG	<3750
B008	B008-5	12/8/05	5	6	Area 1	UG/KG	<3750
B008	B008-10	12/8/05	10	11	Area 1	UG/KG	<3750
B009	B009-2	12/9/05	2	3	Area 1	UG/KG	<3750
B009	B009-5	12/9/05	5	6	Area 1	UG/KG	<3750
B009	B009-10	12/9/05	10	11	Area 1	UG/KG	<3750
B010	B010-2	12/9/05	2	3	Area 4	UG/KG	<3750
B010	B010-5	12/9/05	5	6	Area 4	UG/KG	<3750
B010	B010-10	12/9/05	10	11	Area 4	UG/KG	<3750
B011	B011-2	1/9/06	2	3	Area 1	UG/KG	<37500
B011	B011-5	1/9/06	5	6	Area 1	UG/KG	<3750
B011	B011-10	1/9/06	10	11	Area 1	UG/KG	<3750
B012	B012-2	1/6/06	2	3	Area 1	UG/KG	<3750
B012	B012-5	1/6/06	5	6	Area 1	UG/KG	<3750
B012	B012-10	1/6/06	10	11	Area 1	UG/KG	<3750
B013	B013-2	12/15/05	2	3	Area 1	UG/KG	<75000
B013	B013-5	12/15/05	5	6	Area 1	UG/KG	<75000
B013	B013-10	12/15/05	10	11	Area 1	UG/KG	<3750
B014	B014-2	12/13/05	2	3	Area 1	UG/KG	<37500
B014	B014-5	12/13/05	5	6	Area 1	UG/KG	<3750
B014	B014-10	12/13/05	10	11	Area 1	UG/KG	<3750
B015	B015-2	12/12/05	2	3	Area 1	UG/KG	<3750
B015	B015-5	12/12/05	5	6	Area 1	UG/KG	<3750
B015	B015-10	12/12/05	10	11	Area 1	UG/KG	7500
B016	B016-2	12/13/05	2	3	Area 1	UG/KG	<3750
B016	B016-5	12/13/05	5	6	Area 1	UG/KG	<3750
B016	B016-10	12/13/05	10	11	Area 1	UG/KG	<3750
B017	B017-2	12/29/05	2	3	Area 1	UG/KG	<3750
B017	B017-5	12/29/05	5	6	Area 1	UG/KG	<3750
B017	B017-10	12/29/05	10	11	Area 1	UG/KG	<3750
B018	B018-2	12/29/05	2	3	Area 1	UG/KG	<3750
B018	B018-5	12/29/05	5	6	Area 1	UG/KG	<3750
B018	B018-10	12/29/05	10	11	Area 1	UG/KG	<3750
B019	B019-2	12/28/05	2	3	Area 1	UG/KG	<3750
B019	B019-5	12/28/05	5	6	Area 1	UG/KG	<3750
B019	B019-10	12/28/05	10	11	Area 1	UG/KG	<3750
B020	B020-2	12/12/05	2	3	Area 1	UG/KG	<37500
B020	B020-5	12/12/05	5	6	Area 1	UG/KG	<3750
B020	B020-10	12/12/05	10	11	Area 1	UG/KG	401250
B021	B021-2	12/28/05	2	3	Area 4	UG/KG	<3750
B021	B021-5	12/28/05	5	6	Area 4	UG/KG	<3750
B021	B021-10	12/28/05	10	11	Area 4	UG/KG	346250
B022	B022-2	12/28/05	2	3	Area 3	UG/KG	1512500
B022	B022-5	12/28/05	5	6	Area 3	UG/KG	643750
B022	B022-10	12/28/05	10	11	Area 3	UG/KG	106250
B023	B023-2	12/28/05	2	3	Area 1	UG/KG	2537500
B023	B023-5	12/28/05	5	6	Area 1	UG/KG	2225000

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
B023	B023-10	12/28/05	10	11	Area 1	UG/KG	3700000
B024	B024-2	12/16/05	2	2.5	Area 1	UG/KG	52500
B024	B024-5	12/16/05	5	6	Area 1	UG/KG	30000
B024	B024-10	12/16/05	10	11	Area 1	UG/KG	4000
B025	B025-2	12/15/05	2	3	Area 1	UG/KG	<3750
B025	B025-5	12/15/05	5	6	Area 1	UG/KG	<3750
B025	B025-10	12/15/05	10	11	Area 1	UG/KG	<3750
B026	B026-2	12/15/05	2	3	Area 1	UG/KG	<75000
B026	B026-5	12/15/05	5	6	Area 1	UG/KG	18750
B026	B026-10	12/15/05	10	11	Area 1	UG/KG	<3750
B027	B027-2	12/14/05	2	3	Area 1	UG/KG	1220000
B027	B027-5	12/15/05	5	6	Area 1	UG/KG	395000
B027	B027-10	12/15/05	10	11	Area 1	UG/KG	1525000
B028	B028-2	12/13/05	2	3	Area 1	UG/KG	<37500
B028	B028-5	12/13/05	5	6	Area 1	UG/KG	<3750
B028	B028-10	12/13/05	10	11	Area 1	UG/KG	<3750
B029	B029-2	12/14/05	2	3	Area 1	UG/KG	287500
B029	B029-5	12/14/05	5	6	Area 1	UG/KG	<75000
B029	B029-10	12/14/05	10	11	Area 1	UG/KG	<75000
B030	B030-2	12/14/05	2	3	Area 1	UG/KG	<75000
B030	B030-5	12/14/05	5	6	Area 1	UG/KG	<3750
B030	B030-10	12/14/05	10	11	Area 1	UG/KG	<3750
B031	B031-2	1/6/06	2	3	Area 1	UG/KG	<37500
B031	B031-5	1/6/06	5	6	Area 1	UG/KG	<3750
B031	B031-10	1/6/06	10	11	Area 1	UG/KG	<3750
B032	B032-2	1/6/06	2	3	Area 1	UG/KG	<37500
B032	B032-5	1/6/06	5	6	Area 1	UG/KG	392500
B032	B032-10	1/6/06	10	11	Area 1	UG/KG	501250
B033	B033-2	12/29/05	2	3	Area 1	UG/KG	12500
B033	B033-5	12/29/05	5	6	Area 1	UG/KG	<3750
B033	B033-10	12/29/05	10	11	Area 1	UG/KG	5375
B034	B034-2	12/14/05	2	3	Area 1	UG/KG	<3750
B034	B034-5	12/14/05	5	6	Area 1	UG/KG	<3750
B034	B034-10	12/14/05	10	11	Area 1	UG/KG	<3750
B035	B035-2	12/14/05	2	3	Area 1	UG/KG	<187500
B035	B035-5	12/14/05	5	6	Area 1	UG/KG	<3750
B035	B035-10	12/14/05	10	11	Area 1	UG/KG	<3750
B036	B036-2	12/14/05	2	3	Area 1	UG/KG	5000
B036	B036-5	12/14/05	5	6	Area 1	UG/KG	<3750
B036	B036-10	12/14/05	10	11	Area 1	UG/KG	<3750
B037	B037-2	12/19/05	2	3	Area 1	UG/KG	<3750
B037	B037-5	12/19/05	5	6	Area 1	UG/KG	<3750
B037	B037-10	12/19/05	10	11	Area 1	UG/KG	3750
B038	B038-2	12/19/05	2	3	Area 1	UG/KG	1962500
B038	B038-5	12/19/05	5	6	Area 1	UG/KG	31250
B038	B038-10	12/19/05	10	11	Area 1	UG/KG	5000
B039	B039-2	12/16/05	2	3	Area 1	UG/KG	<3750
B039	B039-5	12/16/05	5	6	Area 1	UG/KG	<3750
B039	B039-10	12/16/05	10	11	Area 1	UG/KG	<3750
B040	B040-2	12/19/05	2	3	Area 1	UG/KG	213750
B040	B040-5	12/19/05	5	6	Area 1	UG/KG	<75000
B040	B040-10	12/19/05	10	11	Area 1	UG/KG	7125
B041	B041-2	12/28/05	2	3	Area 3	UG/KG	<3750
B041	B041-5	12/28/05	5	6	Area 3	UG/KG	7500
B041	B041-10	12/28/05	10	11	Area 3	UG/KG	<3750
B042	B042-2	12/20/05	2	3	Area 3	UG/KG	2450000
B042	B042-5	12/20/05	5	6	Area 3	UG/KG	552500
B042	B042-10	12/20/05	10	11	Area 3	UG/KG	4500
B043	B043-2	12/16/05	2	3	Area 1	UG/KG	1110000
B043	B043-5	12/16/05	5	6	Area 1	UG/KG	2562500
B043	B043-10	12/16/05	10	11	Area 1	UG/KG	1387500
B044	B044-2	12/16/05	2	3	Area 1	UG/KG	<3750
B044	B044-5	12/16/05	5	6	Area 1	UG/KG	<3750
B044	B044-10	12/16/05	10	11	Area 1	UG/KG	<3750
B045	B045-2	12/15/05	2	3	Area 1	UG/KG	7637500
B045	B045-5	12/15/05	5	6	Area 1	UG/KG	578750
B045	B045-10	12/15/05	10	11	Area 1	UG/KG	813750

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
B046	B046-2	12/15/05	2	3	Area 1	UG/KG	1687500
B046	B046-5	12/15/05	5	6	Area 1	UG/KG	8375
B046	B046-10	12/15/05	10	11	Area 1	UG/KG	<3750
B047	B047-2	12/15/05	2	3	Area 1	UG/KG	<3750
B047	B047-5	12/15/05	5	6	Area 1	UG/KG	<3750
B047	B047-10	12/15/05	10	11	Area 1	UG/KG	<3750
B048	B048-2	12/20/05	2	3	Area 1	UG/KG	87500
B048	B048-5	12/20/05	5	6	Area 1	UG/KG	117500
B048	B048-10	12/20/05	10	11	Area 1	UG/KG	1700000
B049	B049-2	12/14/05	2	3	Area 1	UG/KG	<3750
B049	B049-5	12/14/05	5	6	Area 1	UG/KG	<3750
B049	B049-10	12/14/05	10	11	Area 1	UG/KG	<3750
B050	B050-2	12/13/05	2	3	Area 1	UG/KG	<75000
B050	B050-5	12/13/05	5	6	Area 1	UG/KG	<3750
B050	B050-10	12/12/05	10	11	Area 1	UG/KG	186250
B051	B051-2	12/13/05	2	3	Area 1	UG/KG	<3750
B051	B051-5	12/13/05	5	6	Area 1	UG/KG	<3750
B051	B051-10	12/13/05	10	11	Area 1	UG/KG	11500
B052	B052-2	12/29/05	2	3	Area 1	UG/KG	<187500
B052	B052-5	12/29/05	5	6	Area 1	UG/KG	<37500
B052	B052-10	12/29/05	10	11	Area 1	UG/KG	<187500
B053	B053-2	12/28/05	2	3	Area 1	UG/KG	<3750
B053	B053-5	12/28/05	5	6	Area 1	UG/KG	<18750
B053	B053-10	12/28/05	10	11	Area 1	UG/KG	206250
B054	B054-2	12/13/05	2	3	Area 1	UG/KG	<75000
B054	B054-5	12/13/05	5	6	Area 1	UG/KG	<75000
B054	B054-10	12/13/05	10	11	Area 1	UG/KG	<3750
B055	B055-2	12/21/05	2	3	Area 1	UG/KG	1575000
B055	B055-5	12/21/05	5	6	Area 1	UG/KG	1537500
B055	B055-10	12/21/05	10	11	Area 1	UG/KG	7337500
B056	B056-2	12/14/05	2	3	Area 1	UG/KG	32500
B056	B056-5	12/14/05	5	6	Area 1	UG/KG	125000
B056	B056-10	12/14/05	10	11	Area 1	UG/KG	<3750
B057	B057-2	12/13/05	2	3	Area 1	UG/KG	<75000
B057	B057-5	12/13/05	5	6	Area 1	UG/KG	<75000
B057	B057-10	12/13/05	10	11	Area 1	UG/KG	<3750
B058	B058-2	12/20/05	2	3	Area 1	UG/KG	6562500
B058	B058-5	12/20/05	5	6	Area 1	UG/KG	2425000
B058	B058-10	12/20/05	10	11	Area 1	UG/KG	5012500
B059	B059-2	12/20/05	2	3	Area 1	UG/KG	<3750
B059	B059-5	12/20/05	5	6	Area 1	UG/KG	<3750
B059	B059-10	12/20/05	10	11	Area 1	UG/KG	<3750
B060	B060-2	12/20/05	2	3	Area 1	UG/KG	26250
B060	B060-5	12/20/05	5	6	Area 1	UG/KG	728750
B060	B060-10	12/20/05	10	11	Area 1	UG/KG	1287500
B061	B061-2	12/20/05	2	3	Area 1	UG/KG	<3750
B061	B061-5	12/20/05	5	6	Area 1	UG/KG	<3750
B061	B061-10	12/20/05	10	11	Area 1	UG/KG	<3750
B062	B062-2	12/21/05	2	3	Area 1	UG/KG	60000
B062	B062-5	12/21/05	5	6	Area 1	UG/KG	96250
B062	B062-10	12/21/05	10	11	Area 1	UG/KG	<3750
B063	B063-2	1/9/06	2	3	Area 3	UG/KG	53750
B063	B063-5	1/9/06	5	6	Area 3	UG/KG	22500
B063	B063-10	1/9/06	10	11	Area 3	UG/KG	1113750
B064	B064-2	12/23/05	2	3	Area 1	UG/KG	<75000
B064	B064-5	12/23/05	5	6	Area 1	UG/KG	<3750
B064	B064-10	12/23/05	10	11	Area 1	UG/KG	<3750
B065	B065-2	1/12/06	2	3	Area 1	UG/KG	4000
B065	B065-5	1/12/06	5	6	Area 1	UG/KG	<3750
B065	B065-10	1/12/06	10	11	Area 1	UG/KG	<3750
B066	B066-2	1/12/06	2	3	Area 1	UG/KG	<3750
B066	B066-5	1/12/06	5	6	Area 1	UG/KG	<3750
B066	B066-10	1/12/06	10	11	Area 1	UG/KG	<3750
B067	B067-2	12/21/05	2	3	Area 1	UG/KG	3300000
B067	B067-5	12/21/05	5	6	Area 1	UG/KG	2850000
B067	B067-10	12/21/05	10	11	Area 1	UG/KG	42500
B068	B068-2	12/21/05	2	3	Area 1	UG/KG	<37500

Table A7
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Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
B068	B068-5	12/21/05	5	6	Area 1	UG/KG	6187500
B068	B068-10	12/21/05	10	11	Area 1	UG/KG	2962500
B069	B069-2	12/22/05	2	3	Area 1	UG/KG	<3750
B069	B069-5	12/22/05	5	6	Area 1	UG/KG	<3750
B069	B069-10	12/22/05	10	11	Area 1	UG/KG	<3750
B070	B070-2	12/22/05	2	3	Area 1	UG/KG	<187500
B070	B070-5	12/22/05	5	6	Area 1	UG/KG	8250
B070	B070-10	12/22/05	10	11	Area 1	UG/KG	993750
B071	B071-2	12/21/05	2	3	Area 1	UG/KG	<3750
B071	B071-5	12/21/05	5	6	Area 1	UG/KG	<3750
B071	B071-10	12/21/05	10	11	Area 1	UG/KG	4500
B072	B072-2	12/21/05	2	3	Area 1	UG/KG	<187500
B072	B072-5	12/21/05	5	6	Area 1	UG/KG	<3750
B072	B072-10	12/21/05	10	11	Area 1	UG/KG	<3750
B073	B073-2	1/30/06	2	3	Area 3	UG/KG	<3750
B073	B073-5	1/30/06	5	6	Area 3	UG/KG	<3750
B073	B073-10	1/30/06	10	11	Area 3	UG/KG	<3750
B074	B074-2	1/11/06	2	3	Area 2	UG/KG	<3750
B074	B074-5	1/11/06	5	6	Area 2	UG/KG	<3750
B074	B074-10	1/11/06	10	11	Area 2	UG/KG	212500
B075	B075-2	1/11/06	2	3	Area 1	UG/KG	<3750
B075	B075-5	1/11/06	5	6	Area 1	UG/KG	<3750
B075	B075-10	1/11/06	10	11	Area 1	UG/KG	<3750
B076	B076-2	12/22/05	2	3	Area 2	UG/KG	290000
B076	B076-5	12/22/05	5	6	Area 2	UG/KG	562500
B076	B076-10	12/22/05	10	11	Area 2	UG/KG	10812500
B077	B077-2	12/23/05	2	3	Area 2	UG/KG	<3750
B077	B077-5	12/23/05	5	6	Area 2	UG/KG	<3750
B077	B077-10	12/23/05	10	11	Area 2	UG/KG	5000
B078	B078-2	12/23/05	2	3	Area 2	UG/KG	<18750
B078	B078-5	12/23/05	5	6	Area 2	UG/KG	<75000
B078	B078-10	12/23/05	10	11	Area 2	UG/KG	<3750
B079	B079-2	12/23/05	2	3	Area 2	UG/KG	<75000
B079	B079-5	12/23/05	5	6	Area 2	UG/KG	180000
B079	B079-10	12/23/05	10	11	Area 2	UG/KG	<3750
B080	B080-2	12/22/05	2	3	Area 1	UG/KG	<187500
B080	B080-5	12/22/05	5	6	Area 1	UG/KG	<187500
B080	B080-10	12/22/05	10	11	Area 1	UG/KG	95000
B081	B081-2	12/22/05	2	3	Area 1	UG/KG	51250
B081	B081-5	12/22/05	5	6	Area 1	UG/KG	<3750
B081	B081-10	12/22/05	10	11	Area 1	UG/KG	<3750
B082	B082-2	12/23/05	2	3	Area 1	UG/KG	<75000
B082	B082-5	12/23/05	5	6	Area 1	UG/KG	<3750
B082	B082-10	12/23/05	10	11	Area 1	UG/KG	<3750
B083	B083-2	1/4/06	2	3	Area 2	UG/KG	<187500
B083	B083-5	1/4/06	5	6	Area 2	UG/KG	12500
B083	B083-10	1/4/06	10	11	Area 2	UG/KG	<3750
B084	B084-2	1/5/06	2	3	Area 2	UG/KG	<75000
B084	B084-5	1/5/06	5	6	Area 2	UG/KG	<75000
B084	B084-10	1/5/06	10	11	Area 2	UG/KG	<3750
B085	B085-2	12/28/05	2	3	Area 2	UG/KG	<3750
B085	B085-5	12/28/05	5	6	Area 2	UG/KG	<3750
B085	B085-10	12/28/05	10	11	Area 2	UG/KG	<3750
B086	B086-2	1/11/06	2	3	Area 2	UG/KG	<3750
B086	B086-5	1/11/06	5	6	Area 2	UG/KG	<3750
B086	B086-10	1/11/06	10	11	Area 2	UG/KG	<3750
B087	B087-2	1/11/06	2	3	Area 2	UG/KG	<3750
B087	B087-5	1/11/06	5	6	Area 2	UG/KG	<3750
B087	B087-10	1/11/06	10	11	Area 2	UG/KG	<3750
B088	B088-2	1/18/06	2	3	Area 2	UG/KG	<37500
B088	B088-5	1/18/06	5	6	Area 2	UG/KG	<37500
B088	B088-10	1/18/06	10	11	Area 2	UG/KG	<3750
B089	B089-2	1/9/06	2	3	Area 2	UG/KG	166250
B089	B089-5	1/9/06	5	6	Area 2	UG/KG	500000
B089	B089-10	1/9/06	10	11	Area 2	UG/KG	48750
B090	B090-2	1/10/06	2	3	Area 2	UG/KG	<3750
B090	B090-5	1/10/06	5	6	Area 2	UG/KG	<3750

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Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
B090	B090-10	1/10/06	10	11	Area 2	UG/KG	<3750
B091	B091-2	1/10/06	2	3	Area 2	UG/KG	<37500
B091	B091-5	1/10/06	5	6	Area 2	UG/KG	<3750
B091	B091-10	1/10/06	10	11	Area 2	UG/KG	<3750
B092	B092-2	1/5/06	2	3	Area 2	UG/KG	22500
B092	B092-5	1/5/06	5	6	Area 2	UG/KG	<75000
B092	B092-10	1/5/06	10	11	Area 2	UG/KG	<3750
B093	B093-2	1/5/06	2	3	Area 2	UG/KG	7875
B093	B093-5	1/5/06	5	6	Area 2	UG/KG	<3750
B093	B093-10	1/5/06	10	11	Area 2	UG/KG	<3750
B094	B094-2	1/5/06	2	3	Area 2	UG/KG	<75000
B094	B094-5	1/5/06	5	6	Area 2	UG/KG	75000
B094	B094-10	1/5/06	10	11	Area 2	UG/KG	7500
B095	B095-2	1/4/06	2	3	Area 2	UG/KG	<37500
B095	B095-5	1/4/06	5	6	Area 2	UG/KG	<3750
B095	B095-10	1/4/06	10	11	Area 2	UG/KG	<3750
B096	B096-2	12/28/05	2	3	Area 2	UG/KG	<75000
B096	B096-5	12/28/05	5	6	Area 2	UG/KG	<3750
B096	B096-10	12/28/05	10	11	Area 2	UG/KG	<3750
B097	B097-2	1/5/06	2	3	Area 2	UG/KG	<3750
B097	B097-5	1/5/06	5	6	Area 2	UG/KG	<3750
B097	B097-10	1/5/06	10	11	Area 2	UG/KG	<3750
B098	B098-2	1/4/06	2	3	Area 2	UG/KG	278750
B098	B098-5	1/4/06	5	6	Area 2	UG/KG	<3750
B098	B098-10	1/4/06	10	11	Area 2	UG/KG	<3750
B099	B099-2	1/3/06	2	3	Area 2	UG/KG	<18750
B099	B099-5	1/3/06	5	6	Area 2	UG/KG	<3750
B099	B099-10	1/3/06	10	11	Area 2	UG/KG	<3750
B100	B100-2	1/10/06	2	3	Area 2	UG/KG	8750
B100	B100-5	1/10/06	5	6	Area 2	UG/KG	<3750
B100	B100-10	1/10/06	10	11	Area 2	UG/KG	<3750
B101	B101-2	1/10/06	2	3	Area 2	UG/KG	<3750
B101	B101-5	1/10/06	5	6	Area 2	UG/KG	<3750
B101	B101-10	1/10/06	10	11	Area 2	UG/KG	<3750
B102	B102-2	1/9/06	2	3	Area 2	UG/KG	122500
B102	B102-5	1/9/06	5	6	Area 2	UG/KG	<3750
B102	B102-10	1/9/06	10	11	Area 2	UG/KG	<3750
B103	B103-2	1/6/06	2	3	Area 2	UG/KG	<3750
B103	B103-5	1/6/06	5	6	Area 2	UG/KG	<3750
B103	B103-10	1/6/06	10	11	Area 2	UG/KG	<3750
B104	B104-2	2/3/06	2	3	Area 2	UG/KG	<3750
B104	B104-5	2/3/06	5	6	Area 2	UG/KG	<3750
B104	B104-10	2/3/06	10	11	Area 2	UG/KG	<3750
B105	B105-2	1/10/06	2	3	Area 2	UG/KG	<3750
B105	B105-5	1/10/06	5	6	Area 2	UG/KG	<3750
B105	B105-10	1/10/06	10	11	Area 2	UG/KG	<3750
B106	B106-2	12/29/05	2	3	Area 2	UG/KG	<37500
B106	B106-5	12/29/05	5	6	Area 2	UG/KG	10625
B106	B106-10	12/29/05	10	10.5	Area 2	UG/KG	<3750
B107	B107-2	1/4/06	2	3	Area 2	UG/KG	6250
B107	B107-5	1/4/06	5	6	Area 2	UG/KG	<3750
B107	B107-10	1/4/06	10	11	Area 2	UG/KG	<3750
B108	B108-2	1/9/06	2	3	Area 2	UG/KG	<3750
B108	B108-5	1/9/06	5	6	Area 2	UG/KG	<3750
B108	B108-10	1/9/06	10	11	Area 2	UG/KG	<3750
B109	B109-2	1/4/06	2	3	Area 2	UG/KG	<3750
B109	B109-5	1/4/06	5	6	Area 2	UG/KG	<3750
B109	B109-10	1/4/06	10	11	Area 2	UG/KG	<3750
B110	B110-2	12/28/05	2	3	Area 2	UG/KG	<3750
B110	B110-5	12/28/05	5	6	Area 2	UG/KG	<3750
B110	B110-10	12/28/05	10	11	Area 2	UG/KG	<3750
B111	B111-2	12/28/05	2	3	Area 2	UG/KG	<18750
B111	B111-5	12/28/05	5	6	Area 2	UG/KG	<18750
B111	B111-10	12/28/05	10	11	Area 2	UG/KG	<3750
B112	B112-2	12/29/05	2	3	Area 2	UG/KG	<3750
B112	B112-5	12/29/05	5	6	Area 2	UG/KG	<3750
B112	B112-10	12/29/05	10	11	Area 2	UG/KG	<3750

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
B113	B113-2	12/29/05	2	3	Area 2	UG/KG	5625
B113	B113-5	12/29/05	5	6	Area 2	UG/KG	<3750
B113	B113-10	12/29/05	10	11	Area 2	UG/KG	<3750
B114	B114-2	1/3/06	2	3	Area 2	UG/KG	<187500
B114	B114-5	1/3/06	5	6	Area 2	UG/KG	<75000
B114	B114-10	1/3/06	10	11	Area 2	UG/KG	<3750
B115	B115-2	1/3/06	2	3	Area 2	UG/KG	<187500
B115	B115-5	1/3/06	5	6	Area 2	UG/KG	<3750
B115	B115-10	1/3/06	10	11	Area 2	UG/KG	<187500
B116	B116-2	1/4/06	2	3	Area 2	UG/KG	<3750
B116	B116-5	1/4/06	5	6	Area 2	UG/KG	<3750
B116	B116-10	1/4/06	10	11	Area 2	UG/KG	<3750
B117	B117-2	1/6/06	2	3	Area 2	UG/KG	<3750
B117	B117-5	1/6/06	5	6	Area 2	UG/KG	<3750
B117	B117-10	1/6/06	10	11	Area 2	UG/KG	<3750
B118	B118-2	1/6/06	2	3	Area 2	UG/KG	<3750
B118	B118-5	1/6/06	5	6	Area 2	UG/KG	<3750
B118	B118-10	1/6/06	10	11	Area 2	UG/KG	<3750
B119	B119-2	1/27/06	2	3	Area 2	UG/KG	13750
B119	B119-5	1/27/06	5	6	Area 2	UG/KG	<3750
B119	B119-10	1/27/06	10	11	Area 2	UG/KG	<3750
B120	B120-2	1/30/06	2	3	Area 4	UG/KG	107500
B120	B120-5	1/30/06	5	6	Area 4	UG/KG	241250
B120	B120-10	1/30/06	10	11	Area 4	UG/KG	1800000
B121	B121-2	2/1/06	2	3	Area 4	UG/KG	<3750
B121	B121-5	2/1/06	5	6	Area 4	UG/KG	4690000
B121	B121-10	2/1/06	10	11	Area 4	UG/KG	6250
B122	B122-2	1/23/06	2	3	Area 4	UG/KG	117500
B122	B122-5	1/23/06	5	6	Area 4	UG/KG	1850000
B122	B122-10	1/23/06	10	11	Area 4	UG/KG	5250
B123	B123-2	1/20/06	2	3	Area 4	UG/KG	1300000
B123	B123-5	1/20/06	5	6	Area 4	UG/KG	1730000
B123	B123-10	1/19/06	11	12	Area 4	UG/KG	2720000
B124	B124-2	1/16/06	2	3	Area 4	UG/KG	76250
B124	B124-5	1/16/06	5	6	Area 4	UG/KG	<3750
B124	B124-10	1/16/06	10	11	Area 4	UG/KG	<3750
B125	B125-2	1/20/06	2	3	Area 4	UG/KG	56250
B125	B125-5	1/20/06	5	6	Area 4	UG/KG	<3750
B125	B125-10	1/20/06	10	11	Area 4	UG/KG	<3750
B126	B126-2	1/20/06	2	3	Area 4	UG/KG	361250
B126	B126-5	1/20/06	5	6	Area 4	UG/KG	60000
B126	B126-10	1/20/06	10	11	Area 4	UG/KG	<3750
B127	B127-2	1/18/06	2	3	Area 4	UG/KG	6750
B127	B127-5	1/18/06	5	6	Area 4	UG/KG	<3750
B127	B127-10	1/18/06	10	11	Area 4	UG/KG	<3750
B128	B128-2	2/1/06	2	3	Area 4	UG/KG	1790000
B128	B128-5	2/1/06	5	6	Area 4	UG/KG	153750
B128	B128-10	2/1/06	10	11	Area 4	UG/KG	<3750
B129	B129-2	1/18/06	2	3	Area 4	UG/KG	6500
B129	B129-5	1/18/06	5	6	Area 4	UG/KG	4500
B129	B129-10	1/18/06	10	11	Area 4	UG/KG	<3750
B130	B130-2	1/19/06	2	3	Area 4	UG/KG	1300000
B130	B130-5	1/19/06	5	6	Area 4	UG/KG	93750
B130	B130-10	1/19/06	10	11	Area 4	UG/KG	28750
B131	B131-2	1/19/06	2	3	Area 4	UG/KG	<3750
B131	B131-5	1/19/06	5	6	Area 4	UG/KG	<3750
B131	B131-10	1/19/06	10	11	Area 4	UG/KG	<3750
B132	B132-2	1/19/06	2	3	Area 4	UG/KG	<3750
B132	B132-5	1/19/06	5	6	Area 4	UG/KG	<3750
B132	B132-10	1/19/06	10	11	Area 4	UG/KG	<3750
B134	B134-2	1/23/06	2	3	Area 4	UG/KG	13750
B134	B134-5	1/23/06	5	6	Area 4	UG/KG	<3750
B134	B134-10	1/23/06	10	11	Area 4	UG/KG	<3750
B135	B135-2	1/16/06	2	3	Area 4	UG/KG	<3750
B135	B135-5	1/16/06	5	6	Area 4	UG/KG	<3750
B135	B135-10	1/16/06	10	11	Area 4	UG/KG	<3750
B136	B136-2	1/12/06	2	3	Area 4	UG/KG	471250

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
B136	B136-5	1/12/06	5	6	Area 4	UG/KG	443750
B136	B136-10	1/12/06	10	11	Area 4	UG/KG	1186250
B137	B137-2	1/13/06	2	3	Area 4	UG/KG	183750
B137	B137-5	1/13/06	5	6	Area 4	UG/KG	226250
B137	B137-10	1/13/06	10	11	Area 4	UG/KG	10250
B139	B139-2	1/13/06	2	3	Area 4	UG/KG	90000
B139	B139-5	1/13/06	5	6	Area 4	UG/KG	4375
B139	B139-10	1/13/06	10	11	Area 4	UG/KG	80000
B140	B140-2	1/31/06	2	3	Area 4	UG/KG	85000
B140	B140-5	1/31/06	5	6	Area 4	UG/KG	25000
B140	B140-10	1/31/06	10	11	Area 4	UG/KG	<3750
B141	B141-2	1/30/06	2	3	Area 3	UG/KG	7500
B141	B141-5	1/30/06	5	6	Area 3	UG/KG	97500
B141	B141-10	1/30/06	10	11	Area 3	UG/KG	<3750
B142	B142-2	1/31/06	2	3	Area 3	UG/KG	10875
B142	B142-5	1/31/06	5	6	Area 3	UG/KG	120000
B142	B142-10	1/31/06	10	11	Area 3	UG/KG	<75000
B143	B143-2	1/18/06	2	3	Area 3	UG/KG	306250
B143	B143-5	1/18/06	5	6	Area 3	UG/KG	20000
B143	B143-10	1/18/06	10	11	Area 3	UG/KG	<3750
B144	B144-2	1/13/06	2	3	Area 3	UG/KG	117500
B144	B144-5	1/13/06	5	6	Area 3	UG/KG	931250
B144	B144-10	1/13/06	10	11	Area 3	UG/KG	3875
B145	B145-2	1/19/06	2	3	Area 3	UG/KG	332500
B145	B145-5	1/19/06	5	6	Area 3	UG/KG	<3750
B145	B145-10	1/19/06	10	11	Area 3	UG/KG	<3750
B146	B146-2	1/27/06	2	3	Area 3	UG/KG	27500
B146	B146-5	1/27/06	5	6	Area 3	UG/KG	<3750
B146	B146-10	1/27/06	10	11	Area 3	UG/KG	<3750
B147	B147-2	2/1/06	2	3	Area 3	UG/KG	21000
B147	B147-5	2/1/06	5	6	Area 3	UG/KG	247500
B147	B147-10	2/1/06	10	11	Area 3	UG/KG	12500
B148	B148-2	1/23/06	2	3	Area 3	UG/KG	2580000
B148	B148-5	1/23/06	5	6	Area 3	UG/KG	1337500
B148	B148-10	1/23/06	10	11	Area 3	UG/KG	10000
B149	B149-2	1/23/06	2	3	Area 3	UG/KG	8140000
B149	B149-5	1/23/06	5	6	Area 3	UG/KG	8370000
B149	B149-10	1/23/06	10	11	Area 3	UG/KG	6650000
B150	B150-2	1/20/06	2	3	Area 3	UG/KG	623750
B150	B150-5	1/20/06	5	6	Area 3	UG/KG	2487500
B150	B150-10	1/20/06	10	11	Area 3	UG/KG	22900000
B151	B151-2	1/19/06	2	3	Area 4	UG/KG	<3750
B151	B151-5	1/19/06	5	6	Area 4	UG/KG	87500
B151	B151-10	1/19/06	10	11	Area 4	UG/KG	<3750
B152	B152-2	1/20/06	2	3	Area 3	UG/KG	637000
B152	B152-5	1/20/06	5	6	Area 3	UG/KG	421000
B152	B152-10	1/20/06	10	11	Area 3	UG/KG	95000
B153	B153-2	1/20/06	2	3	Area 3	UG/KG	2187500
B153	B153-5	1/20/06	5	6	Area 3	UG/KG	921250
B153	B153-10	1/20/06	10	11	Area 3	UG/KG	3160000
B154	B154-2	1/16/06	2	3	Area 3	UG/KG	739000
B154	B154-5	1/16/06	5	6	Area 3	UG/KG	<3750
B154	B154-10	1/16/06	10	11	Area 3	UG/KG	<3750
B155	B155-2	1/30/06	2	3	Area 3	UG/KG	8150000
B155	B155-5	1/30/06	5	6	Area 3	UG/KG	1047500
B155	B155-10	1/30/06	10	11	Area 3	UG/KG	10600000
B156	B156-2	1/13/06	2	3	Area 3	UG/KG	<37500
B156	B156-5	1/13/06	5	6	Area 3	UG/KG	11250
B156	B156-10	1/13/06	10	11	Area 3	UG/KG	3050000
B158	B158-2	1/30/06	2	3	Area 3	UG/KG	<3750
B158	B158-5	1/30/06	5	6	Area 3	UG/KG	162500
B158	B158-10	1/30/06	10	11	Area 3	UG/KG	6250
B159	B159-2	1/31/06	2	3	Area 3	UG/KG	<3750
B159	B159-5	1/31/06	5	6	Area 3	UG/KG	<37500
B159	B159-10	1/31/06	10	11	Area 3	UG/KG	145000
B160	B160-2	1/31/06	2	3	Area 3	UG/KG	<3750
B160	B160-5	1/31/06	5	6	Area 3	UG/KG	<3750

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
B160	B160-10	1/31/06	10	11	Area 3	UG/KG	<3750
B161	B161-2	1/13/06	2	3	Area 3	UG/KG	57500
B161	B161-5	1/13/06	5	6	Area 3	UG/KG	9687500
B161	B161-10	1/13/06	10	11	Area 3	UG/KG	15000
B162	B162-2	1/16/06	2	3	Area 3	UG/KG	<3750
B162	B162-5	1/16/06	5	6	Area 3	UG/KG	<3750
B162	B162-10	1/16/06	10	11	Area 3	UG/KG	<3750
B163	B163-2	1/16/06	2	3	Area 3	UG/KG	<3750
B163	B163-5	1/16/06	5	6	Area 3	UG/KG	<3750
B163	B163-10	1/16/06	10	11	Area 3	UG/KG	1140000
B164	B164-2	1/16/06	2	3	Area 3	UG/KG	<3750
B164	B164-5	1/16/06	5	6	Area 3	UG/KG	<3750
B164	B164-10	1/16/06	10	11	Area 3	UG/KG	281250
B165	B165-2	1/23/06	2	3	Area 3	UG/KG	5000
B165	B165-5	1/23/06	5	6	Area 3	UG/KG	62500
B165	B165-10	1/23/06	10	11	Area 3	UG/KG	7000
B166	B166-2	1/24/06	2	3	Area 3	UG/KG	<3750
B166	B166-5	1/24/06	5	6	Area 3	UG/KG	<3750
B166	B166-10	1/24/06	10	11	Area 3	UG/KG	<3750
B167	B167-2	1/17/06	2	3	Area 3	UG/KG	<3750
B167	B167-5	1/17/06	5	6	Area 3	UG/KG	<3750
B167	B167-10	1/17/06	10	11	Area 3	UG/KG	<3750
B168	B168-2	1/17/06	2	3	Area 3	UG/KG	670000
B168	B168-5	1/17/06	5	6	Area 3	UG/KG	<3750
B168	B168-10	1/17/06	10	11	Area 3	UG/KG	7500
B169	B169-2	1/17/06	2	3	Area 3	UG/KG	3110000
B169	B169-5	1/17/06	5	6	Area 3	UG/KG	15000
B169	B169-10	1/17/06	10	11	Area 3	UG/KG	<3750
B170	B170-2	1/18/06	2	3	Area 3	UG/KG	5750
B170	B170-5	1/18/06	5	6	Area 3	UG/KG	35000
B170	B170-10	1/18/06	10	11	Area 3	UG/KG	430000
B171	B171-2	1/11/06	2	3	Area 3	UG/KG	1225000
B171	B171-5	1/11/06	5	6	Area 3	UG/KG	303750
B171	B171-10	1/11/06	10	11	Area 3	UG/KG	1001250
B172	B172-2	1/12/06	2	3	Area 3	UG/KG	75000
B172	B172-5	1/12/06	5	6	Area 3	UG/KG	<3750
B172	B172-10	1/12/06	10	11	Area 3	UG/KG	<3750
B173	B173-2	1/12/06	2	3	Area 3	UG/KG	<3750
B173	B173-5	1/12/06	5	6	Area 3	UG/KG	<3750
B173	B173-10	1/12/06	10	11	Area 3	UG/KG	<3750
B174	B174-2	1/12/06	2	3	Area 3	UG/KG	475000
B174	B174-5	1/12/06	5	6	Area 3	UG/KG	<3750
B174	B174-10	1/12/06	10	11	Area 3	UG/KG	<3750
B175	B175-2	2/7/06	2	3	Area 3	UG/KG	<3750
B175	B175-5	2/7/06	5	6	Area 3	UG/KG	<3750
B175	B175-10	2/7/06	10	11	Area 3	UG/KG	<3750
B176	B176-2	2/7/06	2	3	Area 3	UG/KG	343750
B176	B176-5	2/7/06	5	6	Area 3	UG/KG	350000
B176	B176-10	2/7/06	10	11	Area 3	UG/KG	<37500
B177	B177-2	2/2/06	2	3	Area 3	UG/KG	<3750
B177	B177-5	2/2/06	5	6	Area 3	UG/KG	27500
B177	B177-10	2/2/06	10	11	Area 3	UG/KG	<3750
B178	B178-2	2/2/06	2	3	Area 3	UG/KG	88750
B178	B178-5	2/2/06	5	6	Area 3	UG/KG	<3750
B178	B178-10	2/2/06	10	11	Area 3	UG/KG	8750
B179	B179-2	1/26/06	2	3	Area 3	UG/KG	436250
B179	B179-5	1/26/06	5	6	Area 3	UG/KG	658750
B179	B179-10	1/26/06	10	11	Area 3	UG/KG	358750
B180	B180-2	1/26/06	2	3	Area 3	UG/KG	<3750
B180	B180-5	1/26/06	5	6	Area 3	UG/KG	<3750
B180	B180-10	1/26/06	10	11	Area 3	UG/KG	<3750
B181	B181-2	2/6/06	2	3	Area 3	UG/KG	<3750
B181	B181-5	2/6/06	5	6	Area 3	UG/KG	292500
B181	B181-10	2/6/06	10	11	Area 3	UG/KG	<3750
B182	B182-2	1/24/06	2	3	Area 3	UG/KG	<3750
B182	B182-5	1/25/06	5	6	Area 3	UG/KG	60000
B182	B182-10	1/25/06	10	11	Area 3	UG/KG	8750

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
B183	B183-2	1/25/06	2	3	Area 3	UG/KG	402000
B183	B183-5	1/25/06	5	6	Area 3	UG/KG	1760000
B183	B183-10	1/25/06	10	11	Area 3	UG/KG	10200000
B184	B184-2	1/25/06	2	3	Area 3	UG/KG	<187500
B184	B184-5	1/25/06	5	6	Area 3	UG/KG	<3750
B184	B184-10	1/25/06	10	11	Area 3	UG/KG	<3750
B185	B185-2	1/26/06	2	3	Area 3	UG/KG	152500
B185	B185-5	1/26/06	5	6	Area 3	UG/KG	<3750
B185	B185-10	1/26/06	10	11	Area 3	UG/KG	<3750
B186	B186-2	1/27/06	2	3	Area 3	UG/KG	197500
B186	B186-5	1/27/06	5	6	Area 3	UG/KG	<3750
B186	B186-10	1/27/06	10	11	Area 3	UG/KG	<3750
B187	B187-2	1/27/06	2	3	Area 3	UG/KG	9250
B187	B187-5	1/27/06	5	6	Area 3	UG/KG	<3750
B187	B187-10	1/27/06	10	11	Area 3	UG/KG	<3750
B188	B188-2	2/7/06	2	3	Area 2	UG/KG	<3750
B188	B188-5	2/7/06	5	6	Area 2	UG/KG	1032500
B188	B188-10	2/7/06	10	11	Area 2	UG/KG	445000
B189	B189-2	2/7/06	2	3	Area 2	UG/KG	<3750
B189	B189-5	2/7/06	5	6	Area 2	UG/KG	<37500
B189	B189-10	2/7/06	10	11	Area 2	UG/KG	<3750
B190	B190-2	2/8/06	2	3	Area 2	UG/KG	<3750
B190	B190-5	2/8/06	5	6	Area 2	UG/KG	<3750
B190	B190-10	2/8/06	10	11	Area 2	UG/KG	<3750
B191	B191-2	2/1/06	2	3	Area 2	UG/KG	1010000
B191	B191-5	2/1/06	5	6	Area 2	UG/KG	537500
B191	B191-10	2/1/06	10	11	Area 2	UG/KG	1960000
B192	B192-2	2/1/06	2	3	Area 2	UG/KG	230000
B192	B192-5	2/1/06	5	6	Area 2	UG/KG	<3750
B192	B192-10	2/1/06	10	11	Area 2	UG/KG	<3750
B193	B193-2	2/6/06	2	3	Area 3	UG/KG	90000
B193	B193-5	2/6/06	5	6	Area 3	UG/KG	<3750
B193	B193-10	2/6/06	10	11	Area 3	UG/KG	<3750
B194	B194-2	2/3/06	2	3	Area 3	UG/KG	16250
B194	B194-5	2/3/06	5	6	Area 3	UG/KG	18750
B194	B194-10	2/3/06	10	11	Area 3	UG/KG	6020000
B195	B195-2	2/3/06	2	3	Area 3	UG/KG	22500
B195	B195-5	2/3/06	5	6	Area 3	UG/KG	4500
B195	B195-10	2/3/06	10	11	Area 3	UG/KG	<3750
B196	B196-2	1/25/06	2	3	Area 3	UG/KG	<3750
B196	B196-5	1/25/06	5	6	Area 3	UG/KG	<3750
B196	B196-10	1/25/06	10	11	Area 3	UG/KG	3875
B197	B197-2	2/1/06	2	3	Area 3	UG/KG	<3750
B197	B197-5	2/1/06	5	6	Area 3	UG/KG	<3750
B197	B197-10	2/1/06	10	11	Area 3	UG/KG	<3750
B198	B198-2	1/26/06	2	3	Area 3	UG/KG	<3750
B198	B198-5	1/26/06	5	6	Area 3	UG/KG	<3750
B198	B198-10	1/26/06	10	11	Area 3	UG/KG	<3750
B199	B199-2	1/23/06	2	3	Area 3	UG/KG	<75000
B199	B199-5	1/23/06	5	6	Area 3	UG/KG	3350000
B199	B199-10	1/23/06	10	11	Area 3	UG/KG	2087500
B200	B200-2	1/24/06	2	3	Area 3	UG/KG	<3750
B200	B200-5	1/24/06	5	6	Area 3	UG/KG	<3750
B200	B200-10	1/24/06	10	11	Area 3	UG/KG	<3750
B201	B201-2	1/25/06	2	3	Area 3	UG/KG	<3750
B201	B201-5	1/25/06	5	6	Area 3	UG/KG	<3750
B201	B201-10	1/25/06	10	11	Area 3	UG/KG	<3750
B202	B202-2	1/25/06	2	3	Area 3	UG/KG	12500
B202	B202-5	1/25/06	5	6	Area 3	UG/KG	<3750
B202	B202-10	1/25/06	10	11	Area 3	UG/KG	6625
B203	B203-2	2/7/06	2	3	Area 3	UG/KG	406250
B203	B203-5	2/7/06	5	6	Area 3	UG/KG	12500000
B203	B203-10	2/7/06	10	11	Area 3	UG/KG	93750
B204	B204-2	2/6/06	2	3	Area 3	UG/KG	<3750
B204	B204-5	2/6/06	5	6	Area 3	UG/KG	3787500
B204	B204-10	2/6/06	10	11	Area 3	UG/KG	<3750
B205	B205-2	2/7/06	2	3	Area 3	UG/KG	<37500

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
B205	B205-5	2/7/06	5	6	Area 3	UG/KG	<3750
B205	B205-10	2/7/06	10	11	Area 3	UG/KG	10500
B206	B206-2	2/8/06	2	3	Area 2	UG/KG	<37500
B206	B206-5	2/8/06	5	6	Area 2	UG/KG	<3750
B206	B206-10	2/8/06	10	11	Area 2	UG/KG	<3750
B207	B207-2	2/8/06	2	3	Area 2	UG/KG	76250
B207	B207-5	2/8/06	5	6	Area 2	UG/KG	<3750
B207	B207-10	2/8/06	10	11	Area 2	UG/KG	<3750
B208	B208-2	1/31/06	2	3	Area 2	UG/KG	<37500
B208	B208-5	1/31/06	5	6	Area 2	UG/KG	<3750
B208	B208-10	1/31/06	10	11	Area 2	UG/KG	<3750
B209	B209-2	1/31/06	2	3	Area 2	UG/KG	<37500
B209	B209-5	1/31/06	5	6	Area 2	UG/KG	<37500
B209	B209-10	1/31/06	10	11	Area 2	UG/KG	1500000
B210	B210-2	1/31/06	2	3	Area 3	UG/KG	<37500
B210	B210-5	1/31/06	5	6	Area 3	UG/KG	<3750
B210	B210-10	1/31/06	10	11	Area 3	UG/KG	<3750
B211	B211-2	2/6/06	2	3	Area 3	UG/KG	<75000
B211	B211-5	2/6/06	5	6	Area 3	UG/KG	175000
B211	B211-10	2/6/06	10	11	Area 3	UG/KG	9250
B212	B212-2	1/24/06	2	3	Area 3	UG/KG	<3750
B212	B212-5	1/24/06	5	6	Area 3	UG/KG	<3750
B212	B212-10	1/24/06	10	11	Area 3	UG/KG	<3750
B213	B213-2	2/6/06	2	3	Area 3	UG/KG	<3750
B213	B213-5	2/6/06	5	6	Area 3	UG/KG	<3750
B213	B213-10	2/6/06	10	11	Area 3	UG/KG	<3750
B214	B214-2	1/23/06	2	3	Area 3	UG/KG	273750
B214	B214-5	1/23/06	5	6	Area 3	UG/KG	<3750
B214	B214-10	1/23/06	10	11	Area 3	UG/KG	<3750
B215	B215-2	2/3/06	2	3	Area 3	UG/KG	28750
B215	B215-5	2/3/06	5	6	Area 3	UG/KG	<3750
B215	B215-10	2/3/06	10	11	Area 3	UG/KG	<3750
B216	B216-2	2/2/06	2	3	Area 3	UG/KG	<3750
B216	B216-5	2/2/06	5	6	Area 3	UG/KG	<3750
B216	B216-10	2/2/06	10	11	Area 3	UG/KG	<3750
B217	B217-2	1/24/06	2	3	Area 3	UG/KG	<3750
B217	B217-5	1/24/06	5	6	Area 3	UG/KG	<3750
B217	B217-10	1/24/06	10	11	Area 3	UG/KG	<3750
B218	B218-2	2/8/06	2	3	Area 3	UG/KG	<75000
B218	B218-5	2/8/06	5	6	Area 3	UG/KG	843750
B218	B218-10	2/8/06	10	11	Area 3	UG/KG	<3750
B219	B219-2	1/26/06	2	3	Area 3	UG/KG	<3750
B219	B219-5	1/26/06	5	6	Area 3	UG/KG	<3750
B219	B219-10	1/26/06	10	11	Area 3	UG/KG	<3750
B220	B220-2	1/26/06	2	3	Area 3	UG/KG	105000
B220	B220-5	1/26/06	5	6	Area 3	UG/KG	<37500
B220	B220-10	1/26/06	10	11	Area 3	UG/KG	<3750
B221	B221-2	1/27/06	2	3	Area 2	UG/KG	<3750
B221	B221-5	1/27/06	5	6	Area 2	UG/KG	<3750
B221	B221-10	1/27/06	10	11	Area 2	UG/KG	<3750
B222	B222-2	2/3/06	2	3	Area 2	UG/KG	<3750
B222	B222-5	2/3/06	5	6	Area 2	UG/KG	<3750
B222	B222-10	2/3/06	10	11	Area 2	UG/KG	<3750
B223	B223-2	2/3/06	2	3	Area 2	UG/KG	<3750
B223	B223-5	2/3/06	5	6	Area 2	UG/KG	<3750
B223	B223-10	2/3/06	10	11	Area 2	UG/KG	<3750
B224	B224-05	1/21/08	5	6	Area 1	UG/KG	3097000
B226	B226-5	1/18/08	5	6	Area 1	UG/KG	53460
B226	B226-10	1/18/08	9	10	Area 1	UG/KG	40670
B227	B227-5	1/21/08	5	6	Area 1	UG/KG	824000
B227	B227-10	1/21/08	10	11	Area 1	UG/KG	1980000
B228	B228-05	1/18/08	5	6	Area 1	UG/KG	7200000
B228	B228-10	1/18/08	10	11	Area 1	UG/KG	2920000
B229	B229-05	1/18/08	5	6	Area 1	UG/KG	750000
B229	B229-10	1/18/08	10	11	Area 1	UG/KG	3137000
B230	B230-5	1/17/08	5	6	Area 1	UG/KG	16907.1
B230	B230-10	1/17/08	9	10	Area 1	UG/KG	2494900

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
B232	B232-05	1/21/08	5	6	Area 3	UG/KG	102770
B232	B232-10	1/21/08	10	11	Area 3	UG/KG	980
B234	B234-05	1/23/08	5	6	Area 4	UG/KG	105500
B235	B235-5	1/25/08	5	6	Area 4	UG/KG	2160
B235	B235-10	1/25/08	9	10	Area 4	UG/KG	122600
B236	B236-05	1/22/08	5	6	Area 3	UG/KG	357900
B236	B236-10	1/22/08	10	11	Area 3	UG/KG	30853
B237	B237-5	1/23/08	5	6	Area 3	UG/KG	8100000
B237	B237-10	1/23/08	10	11	Area 3	UG/KG	7210000
B238	B238-5	1/25/08	5	6	Area 3	UG/KG	2720000
B238	B238-10	1/25/08	10	11	Area 3	UG/KG	3165000
B239	B239-05	1/22/08	5	6	Area 3	UG/KG	1028000
B240	B240-10	1/22/08	9	10	Area 3	UG/KG	23600
B241	B241-5	1/23/08	5	6	Area 3	UG/KG	3382500
B241	B241-10	1/23/08	10	11	Area 3	UG/KG	4350310
B242	B242-05	1/25/08	5	6	Area 3	UG/KG	1500000
B242	B242-10	1/25/08	10	11	Area 3	UG/KG	11100
B243	B243-05	1/25/08	5	6	Area 3	UG/KG	460000
B243	B243-10	1/25/08	10	11	Area 3	UG/KG	9410000
B246	B246-5	1/15/08	5	6	Area 1	UG/KG	158200
B246	B246-10	1/15/08	10	11	Area 1	UG/KG	3470000
B247	B247-05	1/17/08	5	6	Area 1	UG/KG	160000
B249	B249-05	1/14/08	5	6	Area 1	UG/KG	1552800
B249	B249-10	1/14/08	10	11	Area 1	UG/KG	464435
B250	B250-05	1/16/08	5	6	Area 1	UG/KG	17900
B252	B252-5	1/15/08	5	6	Area 1	UG/KG	12800
B253	B253-05	1/31/08	5	6	Area 4	UG/KG	16880000
B253	B253-10	1/31/08	10	11	Area 4	UG/KG	2749000
B254	B254-05	2/5/08	5	6	Area 4	UG/KG	35000
B255	B255-05	1/31/08	5	6	Area 3	UG/KG	264000
B257	B257-05	1/30/08	5	6	Area 3	UG/KG	4020000
B257	B257-10	1/30/08	10	11	Area 3	UG/KG	1314000
B258	B258-05	1/31/08	5	6	Area 3	UG/KG	2805100
B258	B258-10	1/31/08	10	11	Area 3	UG/KG	18052500
B260	B260-05	2/1/08	5	6	Area 3	UG/KG	1029000
B260	B260-10	2/1/08	10	11	Area 3	UG/KG	417000
B261	B261-5	1/21/09	4.5	5.5	Area 3	UG/KG	17700000
B263	B263-05	2/4/08	5	6	Area 3	UG/KG	668000
B266	B266-10	1/14/08	10	11	Area 1	UG/KG	1400
B267	B267-05	1/15/08	5	6	Area 1	UG/KG	3300
B267	B267-10	1/15/08	10	11	Area 1	UG/KG	3100
B271	B271-10	1/14/08	10	11	Area 1	UG/KG	3154
B272	B272-5	1/14/08	5	6	Area 1	UG/KG	711
B272	B272-10	1/14/08	10	11	Area 1	UG/KG	2190
B274	B274-05	1/14/08	5	6	Area 1	UG/KG	332000
B274	B274-10	1/14/08	10	11	Area 1	UG/KG	463700
B275	B275-5	1/14/08	5	6	Area 1	UG/KG	3012
B275	B275-10	1/14/08	10	11	Area 1	UG/KG	2350
B276	B276-05	2/4/08	5	6	Area 3	UG/KG	837000
B277	B277-5	1/16/08	5	6	Area 3	UG/KG	758000
B277	B277-10	1/16/08	10	11	Area 3	UG/KG	1900
B278	B278-5	1/16/08	5	6	Area 1	UG/KG	11790000
B278	B278-10	1/16/08	10	11	Area 1	UG/KG	6100000
B279	B279-5	1/16/08	5	6	Area 1	UG/KG	1840000
B280	B280-5	1/16/08	5	6	Area 1	UG/KG	806000
B280	B280-10	1/16/08	10	11	Area 1	UG/KG	4634000
B281	B281-5	1/14/08	5	6	Area 1	UG/KG	2718.4
B281	B281-10	1/14/08	10	11	Area 1	UG/KG	2481000
B282	B282-05	1/28/08	5	6	Area 1	UG/KG	42700
B282	B282-10	1/28/08	10	11	Area 1	UG/KG	4890
B283	B283-05	1/29/08	5	6	Area 1	UG/KG	339000
B284	B284-05	1/28/08	5	6	Area 2	UG/KG	125740
B285	B285-05	1/28/08	5	6	Area 2	UG/KG	309200
B285	B285-10	1/28/08	10	11	Area 2	UG/KG	2009
B286	B286-5	1/22/09	5	6	Area 2	UG/KG	210400
B286	B286-10	1/22/09	10	11	Area 2	UG/KG	530000
B287	B287-5	1/22/08	5	6	Area 2	UG/KG	31400

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
B287	B287-10	1/22/08	10	11	Area 2	UG/KG	66000
B289	B289-5	1/28/08	5	6	Area 2	UG/KG	25000
B290	B290-5	1/28/08	5	6	Area 2	UG/KG	728000
B290	B290-10	1/28/08	10	11	Area 2	UG/KG	1138000
B291	B291-10	1/29/08	10	11	Area 2	UG/KG	55630
B292	B292-5	1/22/09	5	6	Area 2	UG/KG	512800
B292	B292-10	1/22/09	10	11	Area 2	UG/KG	109900
B294	B294-05	1/31/08	4.5	5	Area 2	UG/KG	166300
B294	B294-10	1/31/08	10	11	Area 2	UG/KG	372100
B295	B295-5	1/22/09	5	6	Area 2	UG/KG	11900
B297	B297-5	1/20/09	4.5	5.5	Area 2	UG/KG	6200
B299	B299-5	1/19/09	5	6	Area 4	UG/KG	3302000
B299	B299-10	1/19/09	9.5	10.5	Area 4	UG/KG	20460000
B301	B301-05	2/6/08	5	6	Area 4	UG/KG	92100
B301	B301-10	2/6/08	10	11	Area 4	UG/KG	900
B303	B303-05	1/28/08	5	6	Area 4	UG/KG	4820000
B303	B303-10	1/28/08	10	11	Area 4	UG/KG	5470000
B304	B304-5	1/19/09	4.5	5.5	Area 3	UG/KG	47500
B305	B305-5	1/19/09	4.5	5.5	Area 3	UG/KG	99500
B306	B306-05	1/31/08	5	6	Area 3	UG/KG	3436000
B306	B306-10	1/31/08	10	11	Area 3	UG/KG	2336000
B307	B307-5	1/28/08	5	6	Area 3	UG/KG	6710
B307	B307-10	1/28/08	10	11	Area 3	UG/KG	5160
B308	B308-05	1/30/08	5	6	Area 3	UG/KG	639000
B309	B309-5	1/19/09	4.5	5.5	Area 3	UG/KG	20700
B310	B310-05	2/4/08	5	6	Area 3	UG/KG	107000
B311	B311-05	2/5/08	5	6	Area 3	UG/KG	3860000
B313	B313-05	2/1/08	4.5	5.5	Area 3	UG/KG	480
B315	B315-05	1/30/08	4.5	5.5	Area 3	UG/KG	1375000
B315	B315-10	1/30/08	10	11	Area 3	UG/KG	4530000
B316	B316-05	1/30/08	4.5	5.5	Area 3	UG/KG	1099000
B316	B316-10	1/30/08	10	11	Area 3	UG/KG	8310000
B317	B317-05	1/29/08	4.5	5.5	Area 3	UG/KG	1760
B317	B317-10	1/29/08	10	11	Area 3	UG/KG	1200
B318	B318-05	1/28/08	4.5	5.5	Area 2	UG/KG	162000
B319	B319-10	1/21/09	10	11	Area 2	UG/KG	15500
B320	B320-10	1/29/08	10	11	Area 3	UG/KG	415300
B322	B322-05	2/1/08	5	6	Area 3	UG/KG	538200
B322	B322-10	2/1/08	10	11	Area 3	UG/KG	12000
B323	B323-05	1/28/08	4.5	5.5	Area 3	UG/KG	94300
B324	B324-00	4/8/08	0	0.5	Area 4	UG/KG	250150
B325	B325-00	4/8/08	0	0.5	Area 4	UG/KG	226960
B326	B326-00	4/8/08	0	0.5	Area 4	UG/KG	28200
B-401	LL_B-401-1_100611	10/6/11	0.5	1	Area 2	UG/KG	630000
B-401	LL_B-401-3_100611	10/6/11	2.5	3	Area 2	UG/KG	40000
B-401	LL_B-401-6_100611	10/6/11	5.5	6	Area 2	UG/KG	<10000
B-401	LL_B-401-9_100611	10/6/11	8.5	9	Area 2	UG/KG	<10000
B-402	LL_B-402-1_100611	10/6/11	0.5	1	Area 2	UG/KG	270000
B-402	LL_B-402-3_100611	10/6/11	2.5	3	Area 2	UG/KG	85000
B-402	LL_B-402-6_100611	10/6/11	5.5	6	Area 2	UG/KG	10000
B-402	LL_B-402-9_100611	10/6/11	8.5	9	Area 2	UG/KG	<10000
B-403	LL_B-403-1_100711	10/7/11	0.5	1	Area 2	UG/KG	460000
B-403	LL_B-403-3_100711	10/7/11	2.5	3	Area 2	UG/KG	1500000
B-403	LL_B-403-6_100711	10/7/11	5.5	6	Area 2	UG/KG	16000
B-403	LL_B-403-9_100711	10/7/11	8.5	9	Area 2	UG/KG	<10000
B-404	LL_B-404-1_100711	10/7/11	0.5	1	Area 2	UG/KG	3300000
B-404	LL_B-404-3_100711	10/7/11	2.5	3	Area 2	UG/KG	1700000
B-404	LL_B-404-6_100711	10/7/11	5.5	6	Area 2	UG/KG	1000000
B-404	LL_B-404-9_100711	10/7/11	8.5	9	Area 2	UG/KG	4000000
B-405	LL_B-405-1_100711	10/7/11	0.5	1	Area 2	UG/KG	1100000
B-405	LL_B-405-3_100711	10/7/11	2.5	3	Area 2	UG/KG	4800000
B-406	LL_B-406-1_100711	10/7/11	0.5	1	Area 2	UG/KG	350000
B-406	LL_B-406-3_100711	10/7/11	2.5	3	Area 2	UG/KG	850000
B-406	LL_B-406-6_100711	10/7/11	5.5	6	Area 2	UG/KG	1000000
B-406	LL_B-406-9_100711	10/7/11	8.5	9	Area 2	UG/KG	4500000
B-407	LL_B-407-1_100711	10/7/11	0.5	1	Area 2	UG/KG	4500000
B-407	LL_B-407-3_100711	10/7/11	2.5	3	Area 2	UG/KG	5900000

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
B-407	LL_B-407-6_100711	10/7/11	5.5	6	Area 2	UG/KG	2000000
B-407	LL_B-407-9_100711	10/7/11	8.5	9	Area 2	UG/KG	2900000
B-408	LL_B-408-1_100711	10/7/11	0.5	1	Area 2	UG/KG	570000
B-408	LL_B-408-3_100711	10/7/11	2.5	3	Area 2	UG/KG	94000
B-408	LL_B-408-6_100711	10/7/11	5.5	6	Area 2	UG/KG	18000
B-408	LL_B-408-9_100711	10/7/11	8.5	9	Area 2	UG/KG	<10000
B-409	LL_B-409-1_100711	10/7/11	0.5	1	Area 2	UG/KG	380000
B-409	LL_B-409-3_100711	10/7/11	2.5	3	Area 2	UG/KG	250000
B-409	LL_B-409-6_100711	10/7/11	5.5	6	Area 2	UG/KG	1700000
B-409	LL_B-409-9_100711	10/7/11	8.5	9	Area 2	UG/KG	4300000
B-410	LL_B-410-1_100711	10/7/11	0.5	1	Area 2	UG/KG	1300000
B-410	LL_B-410-3_100711	10/7/11	2.5	3	Area 2	UG/KG	500000
B-410	LL_B-410-6_100711	10/7/11	5.5	6	Area 2	UG/KG	<10000
B-410	LL_B-410-9_100711	10/7/11	8.5	9	Area 2	UG/KG	630000
B-411	LL_B-411-1_100611	10/6/11	0.5	1	Area 1	UG/KG	25000
B-411	LL_B-411-3_100611	10/6/11	2.5	3	Area 1	UG/KG	17000
B-411	LL_B-411-6_100611	10/6/11	5.5	6	Area 1	UG/KG	47000
B-411	LL_B-411-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<10000
B-412	LL_B-412-1_100611	10/6/11	0.5	1	Area 1	UG/KG	35000
B-412	LL_B-412-3_100611	10/6/11	2.5	3	Area 1	UG/KG	120000
B-412	LL_B-412-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<10000
B-412	LL_B-412-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<10000
B-413	LL_B-413-1_100611	10/6/11	0.5	1	Area 1	UG/KG	4900000
B-413	LL_B-413-3_100611	10/6/11	2.5	3	Area 1	UG/KG	27000000
B-413	LL_B-413-6_100611	10/6/11	5.5	6	Area 1	UG/KG	6400000
B-413	LL_B-413-9_100611	10/6/11	8.5	9	Area 1	UG/KG	20000000
B-414	LL_B-414-1_100611	10/6/11	0.5	1	Area 1	UG/KG	750000
B-414	LL_B-414-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<10000
B-414	LL_B-414-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<10000
B-414	LL_B-414-9_100611	10/6/11	8.5	9	Area 1	UG/KG	83000
B-415	LL_B-415-1_100611	10/6/11	0.5	1	Area 1	UG/KG	2900000
B-415	LL_B-415-3_100611	10/6/11	2.5	3	Area 1	UG/KG	5200000
B-415	LL_B-415-6_100611	10/6/11	5.5	6	Area 1	UG/KG	430000
B-415	LL_B-415-9_100611	10/6/11	8.5	9	Area 1	UG/KG	54000
B-416	LL_B-416-1_100611	10/6/11	0.5	1	Area 1	UG/KG	430000
B-416	LL_B-416-3_100611	10/6/11	2.5	3	Area 1	UG/KG	330000
B-416	LL_B-416-6_100611	10/6/11	5.5	6	Area 1	UG/KG	730000
B-416	LL_B-416-9_100611	10/6/11	8.5	9	Area 1	UG/KG	360000
B-417	LL_B-417-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<10000
B-417	LL_B-417-3_100611	10/6/11	2.5	3	Area 1	UG/KG	3000000
B-417	LL_B-417-6_100611	10/6/11	5.5	6	Area 1	UG/KG	1200000
B-417	LL_B-417-9_100611	10/6/11	8.5	9	Area 1	UG/KG	1600000
B-418	LL_B-418-1_100611	10/6/11	0.5	1	Area 1	UG/KG	4700000
B-418	LL_B-418-3_100611	10/6/11	2.5	3	Area 1	UG/KG	870000
B-418	LL_B-418-6_100611	10/6/11	5.5	6	Area 1	UG/KG	7100000
B-418	LL_B-418-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<10000
B-419	LL_B-419-1_100611	10/6/11	0.5	1	Area 1	UG/KG	140000
B-419	LL_B-419-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<10000
B-419	LL_B-419-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<10000
B-419	LL_B-419-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<10000
B-420	LL_B-420-1_100611	10/6/11	0.5	1	Area 1	UG/KG	21000
B-420	LL_B-420-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<10000
B-420	LL_B-420-6_100611	10/6/11	5.5	6	Area 1	UG/KG	72000
B-420	LL_B-420-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<10000
B-421	LL_B-421-1_100511	10/5/11	0.5	1	Area 3	UG/KG	96000
B-421	LL_B-421-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<10000
B-421	LL_B-421-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<10000
B-421	LL_B-421-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<10000
B-422	LL_B-422-1_100511	10/5/11	0.5	1	Area 3	UG/KG	2100000
B-422	LL_B-422-3_100511	10/5/11	2.5	3	Area 3	UG/KG	4600000
B-422	LL_B-422-6_100611	10/6/11	5.5	6	Area 3	UG/KG	5200000
B-422	LL_B-422-9_100611	10/6/11	8.5	9	Area 3	UG/KG	8900000
B-423	LL_B-423-1_100711	10/7/11	0.5	1	Area 3	UG/KG	850000
B-423	LL_B-423-3_100711	10/7/11	2.5	3	Area 3	UG/KG	1800000
B-423	LL_B-423-6_100711	10/7/11	5.5	6	Area 3	UG/KG	690000
B-423	LL_B-423-9_100711	10/7/11	8.5	9	Area 3	UG/KG	310000
B-424	LL_B-424-1_100511	10/5/11	0.5	1	Area 3	UG/KG	82000

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
B-424	LL_B-424-3_100511	10/5/11	2.5	3	Area 3	UG/KG	170000
B-424	LL_B-424-6_100511	10/5/11	5.5	6	Area 3	UG/KG	110000
B-424	LL_B-424-9_100511	10/5/11	8.5	9	Area 3	UG/KG	340000
B-425	LL_B-425-1_100511	10/5/11	0.5	1	Area 3	UG/KG	2200000
B-425	LL_B-425-3_100511	10/5/11	2.5	3	Area 3	UG/KG	510000
B-425	LL_B-425-6_100511	10/5/11	5.5	6	Area 3	UG/KG	160000
B-425	LL_B-425-9_100511	10/5/11	8.5	9	Area 3	UG/KG	1800000
B-426	LL_B-426-1_100511	10/5/11	0.5	1	Area 3	UG/KG	5700000
B-426	LL_B-426-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<10000
B-426	LL_B-426-6_100511	10/5/11	5.5	6	Area 3	UG/KG	1100000
B-426	LL_B-426-9_100511	10/5/11	8.5	9	Area 3	UG/KG	680000
B-427	LL_B-427-1_100511	10/5/11	0.5	1	Area 3	UG/KG	16000000
B-427	LL_B-427-3_100511	10/5/11	2.5	3	Area 3	UG/KG	19000
B-427	LL_B-427-6_100511	10/5/11	5.5	6	Area 3	UG/KG	12000
B-427	LL_B-427-9_100511	10/5/11	8.5	9	Area 3	UG/KG	17000
B-428	LL_B-428-1_100511	10/5/11	0.5	1	Area 3	UG/KG	3600000
B-428	LL_B-428-3_100511	10/5/11	2.5	3	Area 3	UG/KG	5400000
B-428	LL_B-428-6_100511	10/5/11	5.5	6	Area 3	UG/KG	1900000
B-428	LL_B-428-9_100511	10/5/11	8.5	9	Area 3	UG/KG	1100000
B-429	LL_B-429-1_100511	10/5/11	0.5	1	Area 3	UG/KG	840000
B-429	LL_B-429-3_100511	10/5/11	2.5	3	Area 3	UG/KG	160000
B-429	LL_B-429-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<10000
B-429	LL_B-429-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<10000
B-430	LL_B-430-1_100511	10/5/11	0.5	1	Area 3	UG/KG	2800000
B-430	LL_B-430-3_100511	10/5/11	2.5	3	Area 3	UG/KG	1000000
B-430	LL_B-430-6_100511	10/5/11	5.5	6	Area 3	UG/KG	790000
B-430	LL_B-430-9_100511	10/5/11	8.5	9	Area 3	UG/KG	580000
S001	S001-0"	12/4/07	0	0.5	Area 4	UG/KG	358000
S002	S002-0"	12/4/07	0	0.5	Area 4	UG/KG	710000
S003ALT	S003ALT-0"	12/20/07	0	0.5	Area 4	UG/KG	532740
S004	S004-0"	1/4/08	0	0.5	Area 4	UG/KG	186300
S004	S004-12"	1/4/08	1	1.5	Area 4	UG/KG	5300
S005	S005-0"	12/18/07	0	0.5	Area 4	UG/KG	2114000
S006	S006-0"	12/17/07	0	0.5	Area 4	UG/KG	1460000
S006	S006-12"	12/17/07	1	1.5	Area 4	UG/KG	5096000
S007	S007-0"	12/17/07	0	0.5	Area 4	UG/KG	3910000
S008	S008-0"	12/17/07	0	0.5	Area 4	UG/KG	416000
S009	S009-0"	12/17/07	0	0.5	Area 4	UG/KG	184000
S009	S009-12"	12/17/07	1	1.5	Area 4	UG/KG	338000
S010	S010-6''	1/19/09	0.5	1	Area 4	UG/KG	312200
S011	S011-0"	12/17/07	0	0.5	Area 4	UG/KG	3451000
S011	S011-12"	12/17/07	1	1.5	Area 4	UG/KG	10810000
S012	S012B-0"	12/18/07	0	0.5	Area 4	UG/KG	1102000
S013	S013-0"	1/4/08	0	0.5	Area 4	UG/KG	1242000
S014	S014-0"	12/4/07	0	0.5	Area 4	UG/KG	210000
S015	S015-0"	12/4/07	0	0.5	Area 4	UG/KG	3418000
S016	S016B-0"	1/2/08	0	0.5	Area 4	UG/KG	7050000
S016	S016B-12"	1/2/08	1	1.5	Area 4	UG/KG	2260
S017	S017-0"	12/4/07	0	0.5	Area 4	UG/KG	604000
S018	S018-0"	12/20/07	0	0.5	Area 4	UG/KG	155700
S019	S019-0"	12/18/07	0	0.5	Area 4	UG/KG	401100
S020	S020-0"	12/18/07	0	0.5	Area 4	UG/KG	11210000
S020	S020-12"	12/18/07	1	1.5	Area 4	UG/KG	12700000
S021	S021-6''	1/19/09	0.5	1	Area 4	UG/KG	240500
S022	S022-0"	12/17/07	0	0.5	Area 4	UG/KG	501000
S023	S023-0"	12/17/07	0	0.5	Area 3	UG/KG	474000
S024	S024-0"	12/17/07	0	0.5	Area 3	UG/KG	37300
S025	S025-0"	12/18/07	0	0.5	Area 3	UG/KG	10170000
S025	S025-12"	12/18/07	1	1.5	Area 3	UG/KG	1372000
S026	S026-0"	12/18/07	0	0.5	Area 3	UG/KG	6010000
S026	S026-12"	12/18/07	1	1.5	Area 3	UG/KG	18500000
S027	S027-0"	12/20/07	0	0.5	Area 3	UG/KG	18700000
S028	S028-0"	12/4/07	0	0.5	Area 3	UG/KG	162000
S029	S029-0"	12/4/07	0	0.5	Area 3	UG/KG	14480000
S029	S029-18"	12/4/07	1.5	2	Area 3	UG/KG	7050000
S030	S030-12"	12/4/07	1	1.5	Area 3	UG/KG	11823000
S031	S031-0"	12/4/07	0	0.5	Area 3	UG/KG	2202000

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
S032	S032-0"	12/4/07	0	0.5	Area 3	UG/KG	1862000
S033	S033-0"	12/4/07	0	0.5	Area 3	UG/KG	4175000
S034	S034-0"	12/4/07	0	0.5	Area 3	UG/KG	1595000
S035	S035-0"	12/4/07	0	0.5	Area 3	UG/KG	8404000
S036	S036-0"	12/4/07	0	0.5	Area 3	UG/KG	11480000
S037	S037-0"	12/4/07	0	0.5	Area 3	UG/KG	20040000
S037	S037-20"	12/4/07	1.67	2.167	Area 3	UG/KG	709000
S038	S038-0"	12/20/07	0	0.5	Area 3	UG/KG	1334800
S039	S039-0"	1/2/08	0	0.5	Area 3	UG/KG	1394000
S039	S039-12"	1/2/08	1	1.5	Area 3	UG/KG	3040000
S040	S040-0"	12/20/07	0	0.5	Area 3	UG/KG	419000
S040	S040-12"	12/20/07	1	1.5	Area 3	UG/KG	1428000
S041	S041-0"	1/30/08	0	0.5	Area 3	UG/KG	217900
S042	S042-0"	1/30/08	0	0.5	Area 3	UG/KG	15550000
S042	S042-12"	1/30/08	1	1.5	Area 3	UG/KG	19930000
S043	S043-0"	1/30/08	0	0.5	Area 3	UG/KG	146300
S044	S044-0"	12/20/07	0	0.5	Area 3	UG/KG	767600
S045	S045-0"	12/20/07	0	0.5	Area 3	UG/KG	206500
S046	S046-0"	12/20/07	0	0.5	Area 3	UG/KG	8200000
S047	S047-6"	1/20/09	0.5	1	Area 3	UG/KG	42410000
S048	S048-0"	1/7/08	0	0.5	Area 3	UG/KG	22250000
S049	S049-6"	1/20/09	0.5	1	Area 3	UG/KG	756310
S050	S050-0"	12/4/07	0	0.5	Area 3	UG/KG	1212000
S051	S051-0"	12/20/07	0	0.5	Area 3	UG/KG	285200
S052	S052-0"	12/20/07	0	0.5	Area 3	UG/KG	711200
S052	S052-12"	12/20/07	1	1.5	Area 3	UG/KG	1492000
S053	S053-0"	12/20/07	0	0.5	Area 3	UG/KG	7341000
S053	S053-12"	12/20/07	1	1.5	Area 3	UG/KG	1500000
S054	S054-0"	1/30/08	0	0.5	Area 3	UG/KG	840340
S055	S055-0"	1/30/08	0	0.5	Area 3	UG/KG	771100
S055	S055-12"	1/30/08	1	1.5	Area 3	UG/KG	671200
S056	S056-0"	1/30/08	0	0.5	Area 3	UG/KG	262590
S056	S056-12"	1/30/08	1	1.5	Area 3	UG/KG	140900
S057	S057-0"	1/30/08	0	0.5	Area 3	UG/KG	209000
S058	S058-0"	2/1/08	0	0.5	Area 3	UG/KG	1230000
S059	S059-0"	2/1/08	0	0.5	Area 3	UG/KG	117490
S059	S059-12"	2/1/08	1	1.5	Area 3	UG/KG	133200
S060	S060-0"	12/13/07	0	0.5	Area 3	UG/KG	2330000
S060	S060-18"	12/13/07	1.5	2	Area 3	UG/KG	21460000
S061	S061-0"	12/13/07	0	0.5	Area 3	UG/KG	1128000
S063	S063-0"	12/14/07	0	0.5	Area 3	UG/KG	84000
S064	S064-0"	12/14/07	0	0.5	Area 3	UG/KG	190000
S064	S064-18"	12/14/07	1.5	2	Area 3	UG/KG	44000
S065	S065-0"	2/1/08	0	0.5	Area 3	UG/KG	137400
S065	S065-12"	2/1/08	1	1.5	Area 3	UG/KG	4980
S066	S066-0"	12/14/07	0	0.5	Area 3	UG/KG	712000
S067	S067-0"	12/14/07	0	0.5	Area 3	UG/KG	330600
S068	S068-0"	12/13/07	0	0.5	Area 3	UG/KG	292000
S069	S069-0"	12/13/07	0	0.5	Area 3	UG/KG	395000
S070	S070-0"	12/13/07	0	0.5	Area 3	UG/KG	398000
S071B	S071B-12"	12/21/07	1	1.5	Area 3	UG/KG	7160
S072	S072-0"	12/4/07	0	0.5	Area 3	UG/KG	218200
S073	S073-0"	12/4/07	0	0.5	Area 3	UG/KG	131400
S074	S074-0"	12/4/07	0	0.5	Area 3	UG/KG	2403100
S075	S075-0"	12/4/07	0	0.5	Area 3	UG/KG	1774000
S076	S076-6''	1/22/09	0.5	1	Area 3	UG/KG	47520000
S078	S078-0"	2/1/08	0	0.5	Area 3	UG/KG	2860000
S078	S078-12"	2/1/08	1	1.5	Area 3	UG/KG	58200
S080	S080-0"	2/1/08	0	0.5	Area 3	UG/KG	2371000
S081	S081-0"	2/1/08	0	0.5	Area 3	UG/KG	187600
S082	S082-0"	12/13/07	0	0.5	Area 3	UG/KG	3004000
S083	S083-0"	12/13/07	0	0.5	Area 3	UG/KG	11340000
S083	S083-15"	12/13/07	1.25	1.75	Area 3	UG/KG	9260000
S084	S084-0"	12/4/07	0	0.5	Area 3	UG/KG	5891000
S085	S085-0"	12/4/07	0	0.5	Area 3	UG/KG	1132100
S086	S086-6"	1/20/09	0.5	1	Area 3	UG/KG	676000
S087	S087-0"	12/13/07	0	0.5	Area 3	UG/KG	1697000

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
S088	S088-0"	1/2/08	0	0.5	Area 3	UG/KG	2051100
S089	S089-0"	1/2/08	0	0.5	Area 3	UG/KG	47360
S090	S090-0"	12/13/07	0	0.5	Area 3	UG/KG	6370000
S090	S090-18"	12/13/07	1.5	2	Area 3	UG/KG	4940000
S091	S091-0"	2/1/08	0	0.5	Area 3	UG/KG	16310000
S092	S092-0"	12/13/07	0	0.5	Area 3	UG/KG	325400
S093	S093-0"	12/4/07	0	0.5	Area 3	UG/KG	1113800
S094	S094-0"	12/4/07	0	0.5	Area 3	UG/KG	24500
S095	S095-0"	12/4/07	0	0.5	Area 3	UG/KG	272000
S096	S096-0"	12/4/07	0	0.5	Area 3	UG/KG	171100
S097	S097-6"	1/20/09	0.5	1	Area 3	UG/KG	547600
S098	S098-0"	12/4/07	0	0.5	Area 3	UG/KG	22100
S099	S099-0"	12/13/07	0	0.5	Area 3	UG/KG	14500
S100	S100-0"	12/13/07	0	0.5	Area 3	UG/KG	94700
S101	S101-0"	12/13/07	0	0.5	Area 3	UG/KG	803000
S102	S102-0"	12/13/07	0	0.5	Area 3	UG/KG	3150000
S102	S102-15"	12/13/07	1.25	1.75	Area 3	UG/KG	872000
S103	S103-0"	1/3/08	0	0.5	Area 2	UG/KG	1507000
S103	S103-12"	1/3/08	1	1.5	Area 2	UG/KG	201300
S105	S105-0"	1/31/08	0	0.5	Area 2	UG/KG	5598000
S106	S106-6''	1/22/09	0.5	1	Area 2	UG/KG	26400
S106	S106-12''	1/22/09	1	1.5	Area 2	UG/KG	12000
S108	S108-0"	12/20/07	0	0.5	Area 2	UG/KG	2030900
S109	S109-0"	1/31/08	0	0.5	Area 2	UG/KG	29100000
S109	S109-12"	1/31/08	1	1.5	Area 2	UG/KG	16100000
S110	S110-6''	1/22/09	0.5	1	Area 2	UG/KG	15240000
S111	S111-0"	12/21/07	0	0.5	Area 2	UG/KG	7680000
S111	S111-12"	12/21/07	1	1.5	Area 2	UG/KG	2780000
S112	S112-6''	1/22/09	0.5	1	Area 2	UG/KG	10030000
S113	S113-0"	1/31/08	0	0.5	Area 2	UG/KG	1658000
S113	S113-12"	1/31/08	1	1.5	Area 2	UG/KG	2830000
S114	S114-0"	1/29/08	0	0.5	Area 2	UG/KG	50207
S115	S115-0"	1/29/08	0	0.5	Area 2	UG/KG	20838000
S116	S116-0"	1/29/08	0	0.5	Area 2	UG/KG	766900
S117	S117-0"	1/31/08	0	0.5	Area 2	UG/KG	3360
S118	S118-6''	1/22/09	0.5	1	Area 2	UG/KG	13800
S119	S119-0"	1/4/08	0	0.5	Area 2	UG/KG	552000
S119	S119-12"	1/4/08	1	1.5	Area 2	UG/KG	4850000
S120	S120-0"	1/4/08	0	0.5	Area 2	UG/KG	230700
S121	S121-0"	1/4/08	0	0.5	Area 2	UG/KG	2660000
S121	S121-12"	1/4/08	1	1.5	Area 2	UG/KG	3480000
S123	S123-0"	11/29/07	0	0.5	Area 1	UG/KG	128600
S124	S124-0"	11/29/07	0	0.5	Area 1	UG/KG	1213000
S125	S125-0"	1/29/08	0	0.5	Area 1	UG/KG	1027600
S126	S126-0"	1/7/08	0	0.5	Area 1	UG/KG	1048700
S126	S126-12"	1/7/08	1	1.5	Area 1	UG/KG	1476000
S127	S127-0"	2/1/08	0	0.5	Area 3	UG/KG	2376000
S130	S130-0"	1/7/08	0	0.5	Area 3	UG/KG	6136000
S130	S130-12"	1/7/08	1	1.5	Area 3	UG/KG	1357200
S131	S131-0"	1/7/08	0	0.5	Area 1	UG/KG	3504400
S132	S132-0"	1/3/08	0	0.5	Area 1	UG/KG	68200
S133	S133B-0"	11/29/07	0	0.5	Area 1	UG/KG	12010000
S133	S133B-12"	11/29/07	1	1.5	Area 1	UG/KG	8905000
S134	S134-0"	1/7/08	0	0.5	Area 1	UG/KG	682000
S135	S135-6''	1/19/09	0.5	1	Area 1	UG/KG	12600
S136	S136-0"	11/29/07	0	0.5	Area 1	UG/KG	46000000
S136	S136-24"	11/29/07	2	2.5	Area 1	UG/KG	6235000
S137	S137-0"	11/29/07	0	0.5	Area 1	UG/KG	6723000
S138	S138-0"	11/29/07	0	0.5	Area 1	UG/KG	10603000
S138	S138-18"	11/29/07	1.5	2	Area 1	UG/KG	24870000
S139	S139-12"	11/29/07	1	1.5	Area 1	UG/KG	12120000
S139	S139-24"	11/29/07	2	2.5	Area 1	UG/KG	5580000
S140	S140-12"	11/29/07	1	1.5	Area 1	UG/KG	73200
S141	S141-0"	1/7/08	0	0.5	Area 3	UG/KG	473200
S141	S141-12"	1/7/08	1	1.5	Area 3	UG/KG	67250
S142	S142-0"	1/7/08	0	0.5	Area 3	UG/KG	5829000
S143	S143-0"	1/7/08	0	0.5	Area 3	UG/KG	105020

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
S144B	S144B-0"	1/31/08	0	0.5	Area 3	UG/KG	387000
S144B	S144B-12"	1/31/08	1	1.5	Area 3	UG/KG	330000
S145	S145-0"	1/7/08	0	0.5	Area 3	UG/KG	178610
S145	S145-12"	1/7/08	1	1.5	Area 3	UG/KG	226600
S146	S146-0"	11/29/07	0	0.5	Area 1	UG/KG	1306000
S147	S147-12"	11/29/07	1	1.5	Area 1	UG/KG	634200
S148	S148-0"	11/29/07	0	0.5	Area 1	UG/KG	508600
S149	S149-12"	11/29/07	1	1.5	Area 1	UG/KG	13908000
S150	S150-12"	11/29/07	1	1.5	Area 1	UG/KG	968500
S151	S151-12"	11/29/07	1	1.5	Area 1	UG/KG	1138000
S152	S152-0"	11/29/07	0	0.5	Area 1	UG/KG	2026000
S153	S153-0"	11/29/07	0	0.5	Area 1	UG/KG	1431000
S154	S154-0"	11/29/07	0	0.5	Area 1	UG/KG	506800
S155	S155B-0"	11/29/07	0	0.5	Area 1	UG/KG	599300
S156	S156-0"	1/7/08	0	0.5	Area 3	UG/KG	410000
S157	S157-0"	1/2/08	0	0.5	Area 3	UG/KG	109800
S158	S158-0"	12/17/07	0	0.5	Area 3	UG/KG	3880000
S158	S158-12"	12/17/07	1	1.5	Area 3	UG/KG	3730000
S159	S159-0"	12/17/07	0	0.5	Area 3	UG/KG	245000
S160	S160-0"	1/7/08	0	0.5	Area 3	UG/KG	179100
S161	S161B-0"	11/29/07	0	0.5	Area 1	UG/KG	64260
S162	S162-12"	11/29/07	1	1.5	Area 1	UG/KG	1098000
S162	S162-24"	11/29/07	2	2.5	Area 1	UG/KG	3840
S163	S163-0"	11/29/07	0	0.5	Area 1	UG/KG	7440
S164	S164-0"	11/29/07	0	0.5	Area 1	UG/KG	1491240
S165	S165-0"	11/29/07	0	0.5	Area 1	UG/KG	4230000
S166	S166-0"	11/29/07	0	0.5	Area 1	UG/KG	859900
S167	S167-0"	11/29/07	0	0.5	Area 1	UG/KG	125800
S168	S168-0"	11/29/07	0	0.5	Area 1	UG/KG	1746900
S169	S169-0"	11/29/07	0	0.5	Area 1	UG/KG	1141900
S170	S170-0"	1/7/08	0	0.5	Area 3	UG/KG	652620
S171	S171-0"	12/17/07	0	0.5	Area 3	UG/KG	3397000
S171	S171-12"	12/17/07	1	1.5	Area 3	UG/KG	30970000
S172	S172-0"	12/17/07	0	0.5	Area 3	UG/KG	2099000
S173	S173-0"	12/17/07	0	0.5	Area 3	UG/KG	3689000
S174	S174-0"	12/14/07	0	0.5	Area 3	UG/KG	434000
S175A	S175A-0"	1/7/08	0	0.5	Area 3	UG/KG	1321000
S175B	S175B-0"	1/31/08	0	0.5	Area 3	UG/KG	696000
S176	S176-0"	11/28/07	0	0.5	Area 1	UG/KG	965000
S177	S177-0"	11/28/07	0	0.5	Area 1	UG/KG	786000
S178	S178-0"	11/28/07	0	0.5	Area 1	UG/KG	377800
S179	S179-0"	11/28/07	0	0.5	Area 1	UG/KG	375900
S180	S180-0"	11/28/07	0	0.5	Area 1	UG/KG	236000
S181	S181-0"	1/31/08	0	0.5	Area 3	UG/KG	83000
S182	S182-0"	12/14/07	0	0.5	Area 3	UG/KG	1564000
S183	S183-0"	12/17/07	0	0.5	Area 3	UG/KG	315000
S184	S184-0"	12/14/07	0	0.5	Area 3	UG/KG	572000
S185	S185-6''	1/19/09	0.5	1	Area 3	UG/KG	1075000
S186	S186-0"	1/31/08	0	0.5	Area 3	UG/KG	157000
S187	S187-0"	1/4/08	0	0.5	Area 1	UG/KG	2100
S188	S188-0"	11/26/07	0	0.5	Area 1	UG/KG	32900
S189	S189-0"	11/26/07	0	0.5	Area 1	UG/KG	65200
S190	S190-0"	11/26/07	0	0.5	Area 1	UG/KG	588700
S191	S191-0"	11/26/07	0	0.5	Area 1	UG/KG	4337300
S192	S192-0"	11/26/07	0	0.5	Area 1	UG/KG	3346000
S193	S193-0"	11/26/07	0	0.5	Area 1	UG/KG	30300
S194	S194-0"	11/26/07	0	0.5	Area 1	UG/KG	351600
S195	S195-0"	11/26/07	0	0.5	Area 1	UG/KG	914000
S196	S196-0"	11/26/07	0	0.5	Area 1	UG/KG	2541000
S196	S196-18"	11/26/07	1.5	2	Area 1	UG/KG	3420000
S197	S197-0"	11/26/07	0	0.5	Area 1	UG/KG	47000
S198	S198-0"	11/26/07	0	0.5	Area 1	UG/KG	249900
S199	S199-12"	11/26/07	1	1.5	Area 1	UG/KG	3770000
S199	S199-24"	11/26/07	2	2.5	Area 1	UG/KG	1243000
S200	S200-0"	11/26/07	0	0.5	Area 1	UG/KG	1293600
S201	S201-0"	11/26/07	0	0.5	Area 1	UG/KG	14930000
S201	S201-18"	11/26/07	1.5	2	Area 1	UG/KG	3224000

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
S202	S202-0"	11/28/07	0	0.5	Area 1	UG/KG	89200
S203	S203-0"	11/28/07	0	0.5	Area 1	UG/KG	275100
S204	S204-0"	11/28/07	0	0.5	Area 1	UG/KG	265100
S205	S205-0"	11/28/07	0	0.5	Area 1	UG/KG	296900
S206	S206-0"	11/28/07	0	0.5	Area 1	UG/KG	258500
S207	S207-0"	11/28/07	0	0.5	Area 1	UG/KG	197400
S208	S208-0"	11/26/07	0	0.5	Area 1	UG/KG	2064000
S209	S209-0"	11/26/07	0	0.5	Area 1	UG/KG	1893000
S210	S210-0"	11/26/07	0	0.5	Area 1	UG/KG	3529000
S211	S211-0"	11/26/07	0	0.5	Area 1	UG/KG	2654000
S212	S212-0"	11/26/07	0	0.5	Area 1	UG/KG	692800
S213	S213-0"	11/28/07	0	0.5	Area 1	UG/KG	7990000
S214	S214-0"	11/28/07	0	0.5	Area 1	UG/KG	286100
S215	S215-0"	11/28/07	0	0.5	Area 1	UG/KG	493000
S216	S216-0"	11/28/07	0	0.5	Area 1	UG/KG	33200
S217	S217-0"	11/28/07	0	0.5	Area 1	UG/KG	190100
S218	S218-0"	11/28/07	0	0.5	Area 1	UG/KG	69200
S219	S219-0"	11/28/07	0	0.5	Area 1	UG/KG	240400
S220	S220-0"	11/28/07	0	0.5	Area 1	UG/KG	244900
S221	S221-0"	11/28/07	0	0.5	Area 1	UG/KG	232600
S222	S222-0"	11/28/07	0	0.5	Area 1	UG/KG	145100
S223	S223-0"	11/28/07	0	0.5	Area 1	UG/KG	875000
S224	S224-0"	11/28/07	0	0.5	Area 1	UG/KG	7604000
S225	S225-0"	11/28/07	0	0.5	Area 1	UG/KG	1137000
S226	S226-0"	11/28/07	0	0.5	Area 1	UG/KG	432900
S227	S227-0"	11/29/07	0	0.5	Area 1	UG/KG	234800
S228	S228-0"	11/28/07	0	0.5	Area 1	UG/KG	9826000
S229	S229-0"	11/28/07	0	0.5	Area 1	UG/KG	577000
S230	S230-0"	11/28/07	0	0.5	Area 1	UG/KG	13300
S230	S230-12"	11/28/07	1	1.5	Area 1	UG/KG	70300
S231	S231-0"	11/28/07	0	0.5	Area 1	UG/KG	225900
S232	S232-0"	11/28/07	0	0.5	Area 1	UG/KG	167200
S233	S233-0"	11/28/07	0	0.5	Area 1	UG/KG	2155000
S234	S234-0"	11/28/07	0	0.5	Area 1	UG/KG	35900
S235	S235-0"	11/28/07	0	0.5	Area 1	UG/KG	86400
S236	S236-0"	11/28/07	0	0.5	Area 1	UG/KG	261900
S237	S237-0"	11/29/07	0	0.5	Area 1	UG/KG	432840
S238	S238-0"	1/28/08	0	0.5	Area 2	UG/KG	59930
S239	S239-0"	1/28/08	0	0.5	Area 2	UG/KG	19000
S239	S239-12"	1/30/08	1	1.5	Area 2	UG/KG	30050
S240	S240-6"	1/20/09	0.5	1	Area 2	UG/KG	587500
S241	S241-6"	1/20/09	0.5	1	Area 2	UG/KG	390700
S242	S242-0"	1/29/08	0	0.5	Area 2	UG/KG	175000
S244	S244-0"	1/28/08	0	0.5	Area 2	UG/KG	143510
S245	S245-0"	1/28/08	0	0.5	Area 2	UG/KG	3680
S246	S246-0"	1/29/08	0	0.5	Area 2	UG/KG	114600
S247	S247-0"	1/29/08	0	0.5	Area 2	UG/KG	133900
S248	S248-0"	1/28/08	0	0.5	Area 2	UG/KG	329780
S249	S249-0"	1/28/08	0	0.5	Area 2	UG/KG	206900
S250	S250-0"	1/28/08	0	0.5	Area 2	UG/KG	350
S250	S250-12"	1/30/08	1	1.5	Area 2	UG/KG	44153.9
S251	S251-0"	1/28/08	0	0.5	Area 2	UG/KG	140870
S251	S251-6"	1/20/09	0.5	1	Area 2	UG/KG	145700
S252	S252-0"	1/29/08	0	0.5	Area 2	UG/KG	107140
S253	S253-0"	1/29/08	0	0.5	Area 2	UG/KG	134000
S254	S254-0"	1/29/08	0	0.5	Area 2	UG/KG	268579
S254	S254-12"	1/30/08	1	1.5	Area 2	UG/KG	148730
S256	S256-0"	1/31/08	0	0.5	Area 2	UG/KG	1506000
S257	S257-0"	1/3/08	0	0.5	Area 2	UG/KG	51700
S258	S258-0"	1/3/08	0	0.5	Area 2	UG/KG	257700
S259	S259-0"	1/31/08	0	0.5	Area 2	UG/KG	364000
S260	S260-0"	1/3/08	0	0.5	Area 2	UG/KG	14600
S261	S261-0"	12/21/07	0	0.5	Area 3	UG/KG	2716300
S262	S262-0"	12/13/07	0	0.5	Area 3	UG/KG	1345000
S263	S263-0"	2/1/08	0	0.5	Area 3	UG/KG	13300
S264	S264-0"	1/3/08	0	0.5	Area 3	UG/KG	411600
S264	S264-12"	1/3/08	1	1.5	Area 3	UG/KG	9330000

Table A7
Results of TPHd Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Diesel Range Organics
S265	S265-6"	1/20/09	0.5	1	Area 3	UG/KG	1465000
S266	S266-0"	12/14/07	0	0.5	Area 3	UG/KG	45700
S267	S267-0"	1/4/08	0	0.5	Area 3	UG/KG	841000
S268	S268-0"	1/2/08	0	0.5	Area 3	UG/KG	793000
S268	S268-12"	1/2/08	1	1.5	Area 3	UG/KG	829000
S269	S269-0"	12/4/07	0	0.5	Area 3	UG/KG	1008000
S270	S270-0"	12/17/07	0	0.5	Area 4	UG/KG	150000
S271	S271-0"	1/4/08	0	0.5	Area 1	UG/KG	136000
S272	S272-0"	11/28/07	0	0.5	Area 1	UG/KG	21700
S273	S273-0"	11/28/07	0	0.5	Area 1	UG/KG	394000
S274	S274-0"	11/29/07	0	0.5	Area 1	UG/KG	411000
S274	S274-12"	11/29/07	1	1.5	Area 1	UG/KG	4470
S275	S275-0"	11/29/07	0	0.5	Area 3	UG/KG	4848000
S275	S275-12"	11/29/07	1	1.5	Area 3	UG/KG	6850000
S276	S276-0"	11/29/07	0	0.5	Area 1	UG/KG	324600
S277	S277-0"	1/31/08	0	0.5	Area 2	UG/KG	166000
S278	S278-0"	1/31/08	0	0.5	Area 2	UG/KG	627000
S279	S279-0"	12/20/07	0	0.5	Area 2	UG/KG	142000
S280	S280-0"	1/3/08	0	0.5	Area 2	UG/KG	237500
S281	S281-0"	2/1/08	0	0.5	Area 2	UG/KG	396910
S282	S282-6"	1/20/09	0.5	1	Area 2	UG/KG	232600
S282	S282-12"	1/20/09	1	1.5	Area 2	UG/KG	370000
S283	S283-0"	1/29/08	0	0.5	Area 2	UG/KG	3216000
S284	S284-0"	1/29/08	0	0.5	Area 2	UG/KG	34110
S284	S284-12"	1/30/08	1	1.5	Area 2	UG/KG	181000
S285	S285-0"	11/28/07	0	0.5	Area 1	UG/KG	748800
S286	S286-0"	11/26/07	0	0.5	Area 1	UG/KG	380800
S287	S287-0"	11/26/07	0	0.5	Area 1	UG/KG	4225000
S287	S287-12"	11/26/07	1	1.5	Area 1	UG/KG	1734000
S288	S288-0"	11/26/07	0	0.5	Area 1	UG/KG	410300
S289	S289-0"	11/26/07	0	0.5	Area 1	UG/KG	389200
S290	S290-0"	11/26/07	0	0.5	Area 1	UG/KG	156500
S291	S291-0"	1/7/08	0	0.5	Area 4	UG/KG	358900
S292	S292-6''	1/19/09	0.5	1	Area 1	UG/KG	273000
S293	S293-0"	11/26/07	0	0.5	Area 1	UG/KG	14460000
S294	S294-0"	11/26/07	0	0.5	Area 1	UG/KG	3771000
S295	S295-6"	11/26/07	0.5	1	Area 1	UG/KG	8130000
S296	S296-0"	11/28/07	0	0.5	Area 1	UG/KG	709600
S296	S296-18"	11/28/07	1.5	2	Area 1	UG/KG	585000
S297	S297-6"	1/20/09	0.5	1	Area 3	UG/KG	236600
S297	S297-12"	1/20/09	1	1.5	Area 3	UG/KG	2331300
S298	S298-0	12/4/07	0	0.5	Area 4	UG/KG	23900000
VE1	LL_VE1_10_052611_01	5/26/11	9.5	10	Area 3	UG/KG	13000

Notes
UG/KG micrograms per kilogram

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
B001	B001-2	12/5/05	2	3	Area 1	UG/KG	197500
B001	B001-5	12/5/05	5	6	Area 1	UG/KG	131250
B001	B001-10	12/5/05	10	11	Area 1	UG/KG	142500
B002	B002-2	12/5/05	2	3	Area 1	UG/KG	66250
B002	B002-5	12/5/05	5	6	Area 1	UG/KG	593750
B002	B002-10	12/5/05	10	11	Area 1	UG/KG	<6250
B003	B003-2	12/7/05	2	3	Area 1	UG/KG	<6250
B003	B003-5	12/7/05	5	6	Area 1	UG/KG	9487500
B004	B004-2	12/8/05	2	3	Area 1	UG/KG	145000
B004	B004-5	12/8/05	5	6	Area 1	UG/KG	6625
B004	B004-10	12/8/05	10	11	Area 1	UG/KG	<6250
B005	B005-2	12/8/05	2	3	Area 1	UG/KG	73750
B005	B005-5	12/8/05	5	6	Area 1	UG/KG	<6250
B005	B005-10	12/8/05	10	11	Area 1	UG/KG	<6250
B006	B006-2	12/12/05	2	3	Area 1	UG/KG	<6250
B006	B006-5	12/12/05	5	6	Area 1	UG/KG	<6250
B006	B006-10	12/12/05	10	11	Area 1	UG/KG	<6250
B007	B007-2	12/12/05	2	3	Area 1	UG/KG	<6250
B007	B007-5	12/12/05	5	6	Area 1	UG/KG	<6250
B007	B007-10	12/12/05	10	11	Area 1	UG/KG	<6250
B008	B008-2	12/8/05	2	3	Area 1	UG/KG	<6250
B008	B008-5	12/8/05	5	6	Area 1	UG/KG	7125
B008	B008-10	12/8/05	10	11	Area 1	UG/KG	<6250
B009	B009-2	12/9/05	2	3	Area 1	UG/KG	61250
B009	B009-5	12/9/05	5	6	Area 1	UG/KG	<6250
B009	B009-10	12/9/05	10	11	Area 1	UG/KG	<6250
B010	B010-2	12/9/05	2	3	Area 4	UG/KG	<6250
B010	B010-5	12/9/05	5	6	Area 4	UG/KG	<6250
B010	B010-10	12/9/05	10	11	Area 4	UG/KG	<6250
B011	B011-2	1/9/06	2	3	Area 1	UG/KG	308750
B011	B011-5	1/9/06	5	6	Area 1	UG/KG	<6250
B011	B011-10	1/9/06	10	11	Area 1	UG/KG	<6250
B012	B012-2	1/6/06	2	3	Area 1	UG/KG	10000
B012	B012-5	1/6/06	5	6	Area 1	UG/KG	11250
B012	B012-10	1/6/06	10	11	Area 1	UG/KG	8750
B013	B013-2	12/15/05	2	3	Area 1	UG/KG	320000
B013	B013-5	12/15/05	5	6	Area 1	UG/KG	400000
B013	B013-10	12/15/05	10	11	Area 1	UG/KG	7500
B014	B014-2	12/13/05	2	3	Area 1	UG/KG	711250
B014	B014-5	12/13/05	5	6	Area 1	UG/KG	<6250
B014	B014-10	12/13/05	10	11	Area 1	UG/KG	<6250
B015	B015-2	12/12/05	2	3	Area 1	UG/KG	120000
B015	B015-5	12/12/05	5	6	Area 1	UG/KG	<6250
B015	B015-10	12/12/05	10	11	Area 1	UG/KG	<6250
B016	B016-2	12/13/05	2	3	Area 1	UG/KG	43750
B016	B016-5	12/13/05	5	6	Area 1	UG/KG	13750
B016	B016-10	12/13/05	10	11	Area 1	UG/KG	<6250
B017	B017-2	12/29/05	2	3	Area 1	UG/KG	8000
B017	B017-5	12/29/05	5	6	Area 1	UG/KG	7875
B017	B017-10	12/29/05	10	11	Area 1	UG/KG	11750
B018	B018-2	12/29/05	2	3	Area 1	UG/KG	10000
B018	B018-5	12/29/05	5	6	Area 1	UG/KG	<6250
B018	B018-10	12/29/05	10	11	Area 1	UG/KG	30000
B019	B019-2	12/28/05	2	3	Area 1	UG/KG	7500
B019	B019-5	12/28/05	5	6	Area 1	UG/KG	<6250
B019	B019-10	12/28/05	10	11	Area 1	UG/KG	<6250
B020	B020-2	12/12/05	2	3	Area 1	UG/KG	163750
B020	B020-5	12/12/05	5	6	Area 1	UG/KG	<6250
B020	B020-10	12/12/05	10	11	Area 1	UG/KG	102500
B021	B021-2	12/28/05	2	3	Area 4	UG/KG	<6250
B021	B021-5	12/28/05	5	6	Area 4	UG/KG	6875
B021	B021-10	12/28/05	10	11	Area 4	UG/KG	<125000
B022	B022-2	12/28/05	2	3	Area 3	UG/KG	250000
B022	B022-5	12/28/05	5	6	Area 3	UG/KG	<125000
B022	B022-10	12/28/05	10	11	Area 3	UG/KG	<62500
B023	B023-2	12/28/05	2	3	Area 1	UG/KG	<625000
B023	B023-5	12/28/05	5	6	Area 1	UG/KG	<625000

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
B023	B023-10	12/28/05	10	11	Area 1	UG/KG	<625000
B024	B024-2	12/16/05	2	2.5	Area 1	UG/KG	7750
B024	B024-5	12/16/05	5	6	Area 1	UG/KG	<6250
B024	B024-10	12/16/05	10	11	Area 1	UG/KG	6375
B025	B025-2	12/15/05	2	3	Area 1	UG/KG	12250
B025	B025-5	12/15/05	5	6	Area 1	UG/KG	11375
B025	B025-10	12/15/05	10	11	Area 1	UG/KG	13750
B026	B026-2	12/15/05	2	3	Area 1	UG/KG	1067500
B026	B026-5	12/15/05	5	6	Area 1	UG/KG	87500
B026	B026-10	12/15/05	10	11	Area 1	UG/KG	6625
B027	B027-2	12/14/05	2	3	Area 1	UG/KG	24000000
B027	B027-5	12/15/05	5	6	Area 1	UG/KG	1180000
B027	B027-10	12/15/05	10	11	Area 1	UG/KG	13000000
B028	B028-2	12/13/05	2	3	Area 1	UG/KG	458750
B028	B028-5	12/13/05	5	6	Area 1	UG/KG	<6250
B028	B028-10	12/13/05	10	11	Area 1	UG/KG	16250
B029	B029-2	12/14/05	2	3	Area 1	UG/KG	2500000
B029	B029-5	12/14/05	5	6	Area 1	UG/KG	2825000
B029	B029-10	12/14/05	10	11	Area 1	UG/KG	452500
B030	B030-2	12/14/05	2	3	Area 1	UG/KG	695000
B030	B030-5	12/14/05	5	6	Area 1	UG/KG	<6250
B030	B030-10	12/14/05	10	11	Area 1	UG/KG	<6250
B031	B031-2	1/6/06	2	3	Area 1	UG/KG	238750
B031	B031-5	1/6/06	5	6	Area 1	UG/KG	11250
B031	B031-10	1/6/06	10	11	Area 1	UG/KG	7500
B032	B032-2	1/6/06	2	3	Area 1	UG/KG	125000
B032	B032-5	1/6/06	5	6	Area 1	UG/KG	420000
B032	B032-10	1/6/06	10	11	Area 1	UG/KG	857500
B033	B033-2	12/29/05	2	3	Area 1	UG/KG	56250
B033	B033-5	12/29/05	5	6	Area 1	UG/KG	22500
B033	B033-10	12/29/05	10	11	Area 1	UG/KG	37500
B034	B034-2	12/14/05	2	3	Area 1	UG/KG	16250
B034	B034-5	12/14/05	5	6	Area 1	UG/KG	<6250
B034	B034-10	12/14/05	10	11	Area 1	UG/KG	6500
B035	B035-2	12/14/05	2	3	Area 1	UG/KG	3875000
B035	B035-5	12/14/05	5	6	Area 1	UG/KG	6250
B035	B035-10	12/14/05	10	11	Area 1	UG/KG	7500
B036	B036-2	12/14/05	2	3	Area 1	UG/KG	36250
B036	B036-5	12/14/05	5	6	Area 1	UG/KG	<6250
B036	B036-10	12/14/05	10	11	Area 1	UG/KG	<6250
B037	B037-2	12/19/05	2	3	Area 1	UG/KG	7875
B037	B037-5	12/19/05	5	6	Area 1	UG/KG	8375
B037	B037-10	12/19/05	10	11	Area 1	UG/KG	10000
B038	B038-2	12/19/05	2	3	Area 1	UG/KG	<6250
B038	B038-5	12/19/05	5	6	Area 1	UG/KG	6250
B038	B038-10	12/19/05	10	11	Area 1	UG/KG	26250
B039	B039-2	12/16/05	2	3	Area 1	UG/KG	<6250
B039	B039-5	12/16/05	5	6	Area 1	UG/KG	<6250
B039	B039-10	12/16/05	10	11	Area 1	UG/KG	<6250
B040	B040-2	12/19/05	2	3	Area 1	UG/KG	396250
B040	B040-5	12/19/05	5	6	Area 1	UG/KG	328750
B040	B040-10	12/19/05	10	11	Area 1	UG/KG	15000
B041	B041-2	12/28/05	2	3	Area 3	UG/KG	<6250
B041	B041-5	12/28/05	5	6	Area 3	UG/KG	<6250
B041	B041-10	12/28/05	10	11	Area 3	UG/KG	<6250
B042	B042-2	12/20/05	2	3	Area 3	UG/KG	333750
B042	B042-5	12/20/05	5	6	Area 3	UG/KG	6250
B042	B042-10	12/20/05	10	11	Area 3	UG/KG	<6250
B043	B043-2	12/16/05	2	3	Area 1	UG/KG	1010000
B043	B043-5	12/16/05	5	6	Area 1	UG/KG	1196250
B043	B043-10	12/16/05	10	11	Area 1	UG/KG	428750
B044	B044-2	12/16/05	2	3	Area 1	UG/KG	<6250
B044	B044-5	12/16/05	5	6	Area 1	UG/KG	7000
B044	B044-10	12/16/05	10	11	Area 1	UG/KG	<6250
B045	B045-2	12/15/05	2	3	Area 1	UG/KG	<6250
B045	B045-5	12/15/05	5	6	Area 1	UG/KG	<6250
B045	B045-10	12/15/05	10	11	Area 1	UG/KG	<312500

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
B046	B046-2	12/15/05	2	3	Area 1	UG/KG	13250000
B046	B046-5	12/15/05	5	6	Area 1	UG/KG	30000
B046	B046-10	12/15/05	10	11	Area 1	UG/KG	6375
B047	B047-2	12/15/05	2	3	Area 1	UG/KG	9250
B047	B047-5	12/15/05	5	6	Area 1	UG/KG	6625
B047	B047-10	12/15/05	10	11	Area 1	UG/KG	6750
B048	B048-2	12/20/05	2	3	Area 1	UG/KG	68750
B048	B048-5	12/20/05	5	6	Area 1	UG/KG	50000
B048	B048-10	12/20/05	10	11	Area 1	UG/KG	577500
B049	B049-2	12/14/05	2	3	Area 1	UG/KG	<6250
B049	B049-5	12/14/05	5	6	Area 1	UG/KG	<6250
B049	B049-10	12/14/05	10	11	Area 1	UG/KG	<6250
B050	B050-2	12/13/05	2	3	Area 1	UG/KG	892500
B050	B050-5	12/13/05	5	6	Area 1	UG/KG	<6250
B050	B050-10	12/12/05	10	11	Area 1	UG/KG	1375000
B051	B051-2	12/13/05	2	3	Area 1	UG/KG	9750
B051	B051-5	12/13/05	5	6	Area 1	UG/KG	6250
B051	B051-10	12/13/05	10	11	Area 1	UG/KG	8750
B052	B052-2	12/29/05	2	3	Area 1	UG/KG	972500
B052	B052-5	12/29/05	5	6	Area 1	UG/KG	195000
B052	B052-10	12/29/05	10	11	Area 1	UG/KG	1035000
B053	B053-2	12/28/05	2	3	Area 1	UG/KG	6250
B053	B053-5	12/28/05	5	6	Area 1	UG/KG	81250
B053	B053-10	12/28/05	10	11	Area 1	UG/KG	630000
B054	B054-2	12/13/05	2	3	Area 1	UG/KG	1662500
B054	B054-5	12/13/05	5	6	Area 1	UG/KG	818750
B054	B054-10	12/13/05	10	11	Area 1	UG/KG	<6250
B055	B055-2	12/21/05	2	3	Area 1	UG/KG	1057500
B055	B055-5	12/21/05	5	6	Area 1	UG/KG	378750
B055	B055-10	12/21/05	10	11	Area 1	UG/KG	631250
B056	B056-2	12/14/05	2	3	Area 1	UG/KG	<6250
B056	B056-5	12/14/05	5	6	Area 1	UG/KG	<125000
B056	B056-10	12/14/05	10	11	Area 1	UG/KG	<6250
B057	B057-2	12/13/05	2	3	Area 1	UG/KG	2022500
B057	B057-5	12/13/05	5	6	Area 1	UG/KG	295000
B057	B057-10	12/13/05	10	11	Area 1	UG/KG	<6250
B058	B058-2	12/20/05	2	3	Area 1	UG/KG	1325000
B058	B058-5	12/20/05	5	6	Area 1	UG/KG	65000
B058	B058-10	12/20/05	10	11	Area 1	UG/KG	203750
B059	B059-2	12/20/05	2	3	Area 1	UG/KG	23750
B059	B059-5	12/20/05	5	6	Area 1	UG/KG	<6250
B059	B059-10	12/20/05	10	11	Area 1	UG/KG	<6250
B060	B060-2	12/20/05	2	3	Area 1	UG/KG	88750
B060	B060-5	12/20/05	5	6	Area 1	UG/KG	122500
B060	B060-10	12/20/05	10	11	Area 1	UG/KG	445000
B061	B061-2	12/20/05	2	3	Area 1	UG/KG	20000
B061	B061-5	12/20/05	5	6	Area 1	UG/KG	<6250
B061	B061-10	12/20/05	10	11	Area 1	UG/KG	<6250
B062	B062-2	12/21/05	2	3	Area 1	UG/KG	35000
B062	B062-5	12/21/05	5	6	Area 1	UG/KG	21250
B062	B062-10	12/21/05	10	11	Area 1	UG/KG	<6250
B063	B063-2	1/9/06	2	3	Area 3	UG/KG	16250
B063	B063-5	1/9/06	5	6	Area 3	UG/KG	10750
B063	B063-10	1/9/06	10	11	Area 3	UG/KG	335000
B064	B064-2	12/23/05	2	3	Area 1	UG/KG	267500
B064	B064-5	12/23/05	5	6	Area 1	UG/KG	7250
B064	B064-10	12/23/05	10	11	Area 1	UG/KG	<6250
B065	B065-2	1/12/06	2	3	Area 1	UG/KG	137500
B065	B065-5	1/12/06	5	6	Area 1	UG/KG	53750
B065	B065-10	1/12/06	10	11	Area 1	UG/KG	<6250
B066	B066-2	1/12/06	2	3	Area 1	UG/KG	<6250
B066	B066-5	1/12/06	5	6	Area 1	UG/KG	<6250
B066	B066-10	1/12/06	10	11	Area 1	UG/KG	<6250
B067	B067-2	12/21/05	2	3	Area 1	UG/KG	208750
B067	B067-5	12/21/05	5	6	Area 1	UG/KG	145000
B067	B067-10	12/21/05	10	11	Area 1	UG/KG	131250
B068	B068-2	12/21/05	2	3	Area 1	UG/KG	75000

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
B068	B068-5	12/21/05	5	6	Area 1	UG/KG	542500
B068	B068-10	12/21/05	10	11	Area 1	UG/KG	140000
B069	B069-2	12/22/05	2	3	Area 1	UG/KG	28750
B069	B069-5	12/22/05	5	6	Area 1	UG/KG	<6250
B069	B069-10	12/22/05	10	11	Area 1	UG/KG	<6250
B070	B070-2	12/22/05	2	3	Area 1	UG/KG	447500
B070	B070-5	12/22/05	5	6	Area 1	UG/KG	17500
B070	B070-10	12/22/05	10	11	Area 1	UG/KG	<312500
B071	B071-2	12/21/05	2	3	Area 1	UG/KG	6250
B071	B071-5	12/21/05	5	6	Area 1	UG/KG	<6250
B071	B071-10	12/21/05	10	11	Area 1	UG/KG	11875
B072	B072-2	12/21/05	2	3	Area 1	UG/KG	575000
B072	B072-5	12/21/05	5	6	Area 1	UG/KG	7500
B072	B072-10	12/21/05	10	11	Area 1	UG/KG	<6250
B073	B073-2	1/30/06	2	3	Area 3	UG/KG	<6250
B073	B073-5	1/30/06	5	6	Area 3	UG/KG	<6250
B073	B073-10	1/30/06	10	11	Area 3	UG/KG	<6250
B074	B074-2	1/11/06	2	3	Area 2	UG/KG	12500
B074	B074-5	1/11/06	5	6	Area 2	UG/KG	<6250
B074	B074-10	1/11/06	10	11	Area 2	UG/KG	135000
B075	B075-2	1/11/06	2	3	Area 1	UG/KG	<6250
B075	B075-5	1/11/06	5	6	Area 1	UG/KG	12500
B075	B075-10	1/11/06	10	11	Area 1	UG/KG	6250
B076	B076-2	12/22/05	2	3	Area 2	UG/KG	663750
B076	B076-5	12/22/05	5	6	Area 2	UG/KG	3262500
B076	B076-10	12/22/05	10	11	Area 2	UG/KG	8300000
B077	B077-2	12/23/05	2	3	Area 2	UG/KG	11250
B077	B077-5	12/23/05	5	6	Area 2	UG/KG	8750
B077	B077-10	12/23/05	10	11	Area 2	UG/KG	6875
B078	B078-2	12/23/05	2	3	Area 2	UG/KG	51250
B078	B078-5	12/23/05	5	6	Area 2	UG/KG	615000
B078	B078-10	12/23/05	10	11	Area 2	UG/KG	6375
B079	B079-2	12/23/05	2	3	Area 2	UG/KG	213750
B079	B079-5	12/23/05	5	6	Area 2	UG/KG	547500
B079	B079-10	12/23/05	10	11	Area 2	UG/KG	8750
B080	B080-2	12/22/05	2	3	Area 1	UG/KG	602500
B080	B080-5	12/22/05	5	6	Area 1	UG/KG	663750
B080	B080-10	12/22/05	10	11	Area 1	UG/KG	<6250
B081	B081-2	12/22/05	2	3	Area 1	UG/KG	196250
B081	B081-5	12/22/05	5	6	Area 1	UG/KG	7500
B081	B081-10	12/22/05	10	11	Area 1	UG/KG	25000
B082	B082-2	12/23/05	2	3	Area 1	UG/KG	362500
B082	B082-5	12/23/05	5	6	Area 1	UG/KG	8125
B082	B082-10	12/23/05	10	11	Area 1	UG/KG	8375
B083	B083-2	1/4/06	2	3	Area 2	UG/KG	377500
B083	B083-5	1/4/06	5	6	Area 2	UG/KG	42500
B083	B083-10	1/4/06	10	11	Area 2	UG/KG	<6250
B084	B084-2	1/5/06	2	3	Area 2	UG/KG	251250
B084	B084-5	1/5/06	5	6	Area 2	UG/KG	453750
B084	B084-10	1/5/06	10	11	Area 2	UG/KG	<6250
B085	B085-2	12/28/05	2	3	Area 2	UG/KG	<6250
B085	B085-5	12/28/05	5	6	Area 2	UG/KG	<6250
B085	B085-10	12/28/05	10	11	Area 2	UG/KG	<6250
B086	B086-2	1/11/06	2	3	Area 2	UG/KG	<6250
B086	B086-5	1/11/06	5	6	Area 2	UG/KG	<6250
B086	B086-10	1/11/06	10	11	Area 2	UG/KG	<6250
B087	B087-2	1/11/06	2	3	Area 2	UG/KG	7500
B087	B087-5	1/11/06	5	6	Area 2	UG/KG	<6250
B087	B087-10	1/11/06	10	11	Area 2	UG/KG	<6250
B088	B088-2	1/18/06	2	3	Area 2	UG/KG	171250
B088	B088-5	1/18/06	5	6	Area 2	UG/KG	140000
B088	B088-10	1/18/06	10	11	Area 2	UG/KG	<6250
B089	B089-2	1/9/06	2	3	Area 2	UG/KG	90000
B089	B089-5	1/9/06	5	6	Area 2	UG/KG	170000
B089	B089-10	1/9/06	10	11	Area 2	UG/KG	51250
B090	B090-2	1/10/06	2	3	Area 2	UG/KG	8125
B090	B090-5	1/10/06	5	6	Area 2	UG/KG	7125

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
B090	B090-10	1/10/06	10	11	Area 2	UG/KG	7500
B091	B091-2	1/10/06	2	3	Area 2	UG/KG	278750
B091	B091-5	1/10/06	5	6	Area 2	UG/KG	7500
B091	B091-10	1/10/06	10	11	Area 2	UG/KG	<6250
B092	B092-2	1/5/06	2	3	Area 2	UG/KG	227500
B092	B092-5	1/5/06	5	6	Area 2	UG/KG	243750
B092	B092-10	1/5/06	10	11	Area 2	UG/KG	7500
B093	B093-2	1/5/06	2	3	Area 2	UG/KG	61250
B093	B093-5	1/5/06	5	6	Area 2	UG/KG	<6250
B093	B093-10	1/5/06	10	11	Area 2	UG/KG	<6250
B094	B094-2	1/5/06	2	3	Area 2	UG/KG	306250
B094	B094-5	1/5/06	5	6	Area 2	UG/KG	140000
B094	B094-10	1/5/06	10	11	Area 2	UG/KG	41250
B095	B095-2	1/4/06	2	3	Area 2	UG/KG	322500
B095	B095-5	1/4/06	5	6	Area 2	UG/KG	<6250
B095	B095-10	1/4/06	10	11	Area 2	UG/KG	<6250
B096	B096-2	12/28/05	2	3	Area 2	UG/KG	273750
B096	B096-5	12/28/05	5	6	Area 2	UG/KG	<6250
B096	B096-10	12/28/05	10	11	Area 2	UG/KG	<6250
B097	B097-2	1/5/06	2	3	Area 2	UG/KG	202500
B097	B097-5	1/5/06	5	6	Area 2	UG/KG	<6250
B097	B097-10	1/5/06	10	11	Area 2	UG/KG	<6250
B098	B098-2	1/4/06	2	3	Area 2	UG/KG	908750
B098	B098-5	1/4/06	5	6	Area 2	UG/KG	<6250
B098	B098-10	1/4/06	10	11	Area 2	UG/KG	<6250
B099	B099-2	1/3/06	2	3	Area 2	UG/KG	37500
B099	B099-5	1/3/06	5	6	Area 2	UG/KG	7500
B099	B099-10	1/3/06	10	11	Area 2	UG/KG	<6250
B100	B100-2	1/10/06	2	3	Area 2	UG/KG	42500
B100	B100-5	1/10/06	5	6	Area 2	UG/KG	8000
B100	B100-10	1/10/06	10	11	Area 2	UG/KG	8750
B101	B101-2	1/10/06	2	3	Area 2	UG/KG	6750
B101	B101-5	1/10/06	5	6	Area 2	UG/KG	<6250
B101	B101-10	1/10/06	10	11	Area 2	UG/KG	7500
B102	B102-2	1/9/06	2	3	Area 2	UG/KG	388750
B102	B102-5	1/9/06	5	6	Area 2	UG/KG	8750
B102	B102-10	1/9/06	10	11	Area 2	UG/KG	8875
B103	B103-2	1/6/06	2	3	Area 2	UG/KG	6875
B103	B103-5	1/6/06	5	6	Area 2	UG/KG	6250
B103	B103-10	1/6/06	10	11	Area 2	UG/KG	8750
B104	B104-2	2/3/06	2	3	Area 2	UG/KG	7000
B104	B104-5	2/3/06	5	6	Area 2	UG/KG	<6250
B104	B104-10	2/3/06	10	11	Area 2	UG/KG	<6250
B105	B105-2	1/10/06	2	3	Area 2	UG/KG	<6250
B105	B105-5	1/10/06	5	6	Area 2	UG/KG	11250
B105	B105-10	1/10/06	10	11	Area 2	UG/KG	7125
B106	B106-2	12/29/05	2	3	Area 2	UG/KG	142500
B106	B106-5	12/29/05	5	6	Area 2	UG/KG	70000
B106	B106-10	12/29/05	10	10.5	Area 2	UG/KG	<6250
B107	B107-2	1/4/06	2	3	Area 2	UG/KG	67500
B107	B107-5	1/4/06	5	6	Area 2	UG/KG	37500
B107	B107-10	1/4/06	10	11	Area 2	UG/KG	<6250
B108	B108-2	1/9/06	2	3	Area 2	UG/KG	<6250
B108	B108-5	1/9/06	5	6	Area 2	UG/KG	6250
B108	B108-10	1/9/06	10	11	Area 2	UG/KG	<6250
B109	B109-2	1/4/06	2	3	Area 2	UG/KG	98750
B109	B109-5	1/4/06	5	6	Area 2	UG/KG	<6250
B109	B109-10	1/4/06	10	11	Area 2	UG/KG	<6250
B110	B110-2	12/28/05	2	3	Area 2	UG/KG	<6250
B110	B110-5	12/28/05	5	6	Area 2	UG/KG	<6250
B110	B110-10	12/28/05	10	11	Area 2	UG/KG	<6250
B111	B111-2	12/28/05	2	3	Area 2	UG/KG	210000
B111	B111-5	12/28/05	5	6	Area 2	UG/KG	103750
B111	B111-10	12/28/05	10	11	Area 2	UG/KG	7500
B112	B112-2	12/29/05	2	3	Area 2	UG/KG	8375
B112	B112-5	12/29/05	5	6	Area 2	UG/KG	7000
B112	B112-10	12/29/05	10	11	Area 2	UG/KG	7125

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
B113	B113-2	12/29/05	2	3	Area 2	UG/KG	27500
B113	B113-5	12/29/05	5	6	Area 2	UG/KG	6250
B113	B113-10	12/29/05	10	11	Area 2	UG/KG	<6250
B114	B114-2	1/3/06	2	3	Area 2	UG/KG	648750
B114	B114-5	1/3/06	5	6	Area 2	UG/KG	161250
B114	B114-10	1/3/06	10	11	Area 2	UG/KG	7500
B115	B115-2	1/3/06	2	3	Area 2	UG/KG	605000
B115	B115-5	1/3/06	5	6	Area 2	UG/KG	<6250
B115	B115-10	1/3/06	10	11	Area 2	UG/KG	461250
B116	B116-2	1/4/06	2	3	Area 2	UG/KG	<6250
B116	B116-5	1/4/06	5	6	Area 2	UG/KG	<6250
B116	B116-10	1/4/06	10	11	Area 2	UG/KG	<6250
B117	B117-2	1/6/06	2	3	Area 2	UG/KG	7500
B117	B117-5	1/6/06	5	6	Area 2	UG/KG	9250
B117	B117-10	1/6/06	10	11	Area 2	UG/KG	6625
B118	B118-2	1/6/06	2	3	Area 2	UG/KG	10000
B118	B118-5	1/6/06	5	6	Area 2	UG/KG	11875
B118	B118-10	1/6/06	10	11	Area 2	UG/KG	7875
B119	B119-2	1/27/06	2	3	Area 2	UG/KG	30000
B119	B119-5	1/27/06	5	6	Area 2	UG/KG	<6250
B119	B119-10	1/27/06	10	11	Area 2	UG/KG	6875
B120	B120-2	1/30/06	2	3	Area 4	UG/KG	<6250
B120	B120-5	1/30/06	5	6	Area 4	UG/KG	<62500
B120	B120-10	1/30/06	10	11	Area 4	UG/KG	<62500
B121	B121-2	2/1/06	2	3	Area 4	UG/KG	23750
B121	B121-5	2/1/06	5	6	Area 4	UG/KG	10400000
B121	B121-10	2/1/06	10	11	Area 4	UG/KG	32500
B122	B122-2	1/23/06	2	3	Area 4	UG/KG	797500
B122	B122-5	1/23/06	5	6	Area 4	UG/KG	4020000
B122	B122-10	1/23/06	10	11	Area 4	UG/KG	<6250
B123	B123-2	1/20/06	2	3	Area 4	UG/KG	124000
B123	B123-5	1/20/06	5	6	Area 4	UG/KG	1080000
B123	B123-10	1/19/06	11	12	Area 4	UG/KG	569000
B124	B124-2	1/16/06	2	3	Area 4	UG/KG	2587500
B124	B124-5	1/16/06	5	6	Area 4	UG/KG	6500
B124	B124-10	1/16/06	10	11	Area 4	UG/KG	6375
B125	B125-2	1/20/06	2	3	Area 4	UG/KG	168750
B125	B125-5	1/20/06	5	6	Area 4	UG/KG	7000
B125	B125-10	1/20/06	10	11	Area 4	UG/KG	<6250
B126	B126-2	1/20/06	2	3	Area 4	UG/KG	572500
B126	B126-5	1/20/06	5	6	Area 4	UG/KG	105000
B126	B126-10	1/20/06	10	11	Area 4	UG/KG	<6250
B127	B127-2	1/18/06	2	3	Area 4	UG/KG	7500
B127	B127-5	1/18/06	5	6	Area 4	UG/KG	8750
B127	B127-10	1/18/06	10	11	Area 4	UG/KG	<6250
B128	B128-2	2/1/06	2	3	Area 4	UG/KG	1780000
B128	B128-5	2/1/06	5	6	Area 4	UG/KG	165000
B128	B128-10	2/1/06	10	11	Area 4	UG/KG	8500
B129	B129-2	1/18/06	2	3	Area 4	UG/KG	67500
B129	B129-5	1/18/06	5	6	Area 4	UG/KG	18750
B129	B129-10	1/18/06	10	11	Area 4	UG/KG	<6250
B130	B130-2	1/19/06	2	3	Area 4	UG/KG	3050000
B130	B130-5	1/19/06	5	6	Area 4	UG/KG	70000
B130	B130-10	1/19/06	10	11	Area 4	UG/KG	46250
B131	B131-2	1/19/06	2	3	Area 4	UG/KG	<6250
B131	B131-5	1/19/06	5	6	Area 4	UG/KG	<6250
B131	B131-10	1/19/06	10	11	Area 4	UG/KG	<6250
B132	B132-2	1/19/06	2	3	Area 4	UG/KG	<6250
B132	B132-5	1/19/06	5	6	Area 4	UG/KG	6625
B132	B132-10	1/19/06	10	11	Area 4	UG/KG	<6250
B134	B134-2	1/23/06	2	3	Area 4	UG/KG	21250
B134	B134-5	1/23/06	5	6	Area 4	UG/KG	<6250
B134	B134-10	1/23/06	10	11	Area 4	UG/KG	<6250
B135	B135-2	1/16/06	2	3	Area 4	UG/KG	9000
B135	B135-5	1/16/06	5	6	Area 4	UG/KG	<6250
B135	B135-10	1/16/06	10	11	Area 4	UG/KG	<6250
B136	B136-2	1/12/06	2	3	Area 4	UG/KG	148750

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
B136	B136-5	1/12/06	5	6	Area 4	UG/KG	<125000
B136	B136-10	1/12/06	10	11	Area 4	UG/KG	182500
B137	B137-2	1/13/06	2	3	Area 4	UG/KG	202500
B137	B137-5	1/13/06	5	6	Area 4	UG/KG	95000
B137	B137-10	1/13/06	10	11	Area 4	UG/KG	<6250
B139	B139-2	1/13/06	2	3	Area 4	UG/KG	276250
B139	B139-5	1/13/06	5	6	Area 4	UG/KG	<6250
B139	B139-10	1/13/06	10	11	Area 4	UG/KG	41250
B140	B140-2	1/31/06	2	3	Area 4	UG/KG	401250
B140	B140-5	1/31/06	5	6	Area 4	UG/KG	336250
B140	B140-10	1/31/06	10	11	Area 4	UG/KG	<6250
B141	B141-2	1/30/06	2	3	Area 3	UG/KG	77500
B141	B141-5	1/30/06	5	6	Area 3	UG/KG	91250
B141	B141-10	1/30/06	10	11	Area 3	UG/KG	<6250
B142	B142-2	1/31/06	2	3	Area 3	UG/KG	53750
B142	B142-5	1/31/06	5	6	Area 3	UG/KG	216250
B142	B142-10	1/31/06	10	11	Area 3	UG/KG	127500
B143	B143-2	1/18/06	2	3	Area 3	UG/KG	300000
B143	B143-5	1/18/06	5	6	Area 3	UG/KG	43750
B143	B143-10	1/18/06	10	11	Area 3	UG/KG	12500
B144	B144-2	1/13/06	2	3	Area 3	UG/KG	473750
B144	B144-5	1/13/06	5	6	Area 3	UG/KG	2275000
B144	B144-10	1/13/06	10	11	Area 3	UG/KG	11875
B145	B145-2	1/19/06	2	3	Area 3	UG/KG	40000
B145	B145-5	1/19/06	5	6	Area 3	UG/KG	<6250
B145	B145-10	1/19/06	10	11	Area 3	UG/KG	6500
B146	B146-2	1/27/06	2	3	Area 3	UG/KG	<6250
B146	B146-5	1/27/06	5	6	Area 3	UG/KG	<6250
B146	B146-10	1/27/06	10	11	Area 3	UG/KG	6500
B147	B147-2	2/1/06	2	3	Area 3	UG/KG	<6250
B147	B147-5	2/1/06	5	6	Area 3	UG/KG	<125000
B147	B147-10	2/1/06	10	11	Area 3	UG/KG	43750
B148	B148-2	1/23/06	2	3	Area 3	UG/KG	2380000
B148	B148-5	1/23/06	5	6	Area 3	UG/KG	456250
B148	B148-10	1/23/06	10	11	Area 3	UG/KG	7500
B149	B149-2	1/23/06	2	3	Area 3	UG/KG	632000
B149	B149-5	1/23/06	5	6	Area 3	UG/KG	1080000
B149	B149-10	1/23/06	10	11	Area 3	UG/KG	2237500
B150	B150-2	1/20/06	2	3	Area 3	UG/KG	180000
B150	B150-5	1/20/06	5	6	Area 3	UG/KG	128750
B150	B150-10	1/20/06	10	11	Area 3	UG/KG	<2500000
B151	B151-2	1/19/06	2	3	Area 4	UG/KG	46250
B151	B151-5	1/19/06	5	6	Area 4	UG/KG	1625000
B151	B151-10	1/19/06	10	11	Area 4	UG/KG	<6250
B152	B152-2	1/20/06	2	3	Area 3	UG/KG	4440000
B152	B152-5	1/20/06	5	6	Area 3	UG/KG	<312500
B152	B152-10	1/20/06	10	11	Area 3	UG/KG	<6250
B153	B153-2	1/20/06	2	3	Area 3	UG/KG	1425000
B153	B153-5	1/20/06	5	6	Area 3	UG/KG	150000
B153	B153-10	1/20/06	10	11	Area 3	UG/KG	1246250
B154	B154-2	1/16/06	2	3	Area 3	UG/KG	2820000
B154	B154-5	1/16/06	5	6	Area 3	UG/KG	7500
B154	B154-10	1/16/06	10	11	Area 3	UG/KG	10000
B155	B155-2	1/30/06	2	3	Area 3	UG/KG	1190000
B155	B155-5	1/30/06	5	6	Area 3	UG/KG	<312500
B155	B155-10	1/30/06	10	11	Area 3	UG/KG	<625000
B156	B156-2	1/13/06	2	3	Area 3	UG/KG	291250
B156	B156-5	1/13/06	5	6	Area 3	UG/KG	8875
B156	B156-10	1/13/06	10	11	Area 3	UG/KG	470000
B158	B158-2	1/30/06	2	3	Area 3	UG/KG	<6250
B158	B158-5	1/30/06	5	6	Area 3	UG/KG	60000
B158	B158-10	1/30/06	10	11	Area 3	UG/KG	<6250
B159	B159-2	1/31/06	2	3	Area 3	UG/KG	<6250
B159	B159-5	1/31/06	5	6	Area 3	UG/KG	120000
B159	B159-10	1/31/06	10	11	Area 3	UG/KG	<125000
B160	B160-2	1/31/06	2	3	Area 3	UG/KG	6750
B160	B160-5	1/31/06	5	6	Area 3	UG/KG	7125

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
B160	B160-10	1/31/06	10	11	Area 3	UG/KG	<6250
B161	B161-2	1/13/06	2	3	Area 3	UG/KG	12500
B161	B161-5	1/13/06	5	6	Area 3	UG/KG	1925000
B161	B161-10	1/13/06	10	11	Area 3	UG/KG	<6250
B162	B162-2	1/16/06	2	3	Area 3	UG/KG	<6250
B162	B162-5	1/16/06	5	6	Area 3	UG/KG	<6250
B162	B162-10	1/16/06	10	11	Area 3	UG/KG	11750
B163	B163-2	1/16/06	2	3	Area 3	UG/KG	<6250
B163	B163-5	1/16/06	5	6	Area 3	UG/KG	8125
B163	B163-10	1/16/06	10	11	Area 3	UG/KG	<625000
B164	B164-2	1/16/06	2	3	Area 3	UG/KG	<6250
B164	B164-5	1/16/06	5	6	Area 3	UG/KG	7500
B164	B164-10	1/16/06	10	11	Area 3	UG/KG	145000
B165	B165-2	1/23/06	2	3	Area 3	UG/KG	11375
B165	B165-5	1/23/06	5	6	Area 3	UG/KG	506250
B165	B165-10	1/23/06	10	11	Area 3	UG/KG	6875
B166	B166-2	1/24/06	2	3	Area 3	UG/KG	<6250
B166	B166-5	1/24/06	5	6	Area 3	UG/KG	<6250
B166	B166-10	1/24/06	10	11	Area 3	UG/KG	<6250
B167	B167-2	1/17/06	2	3	Area 3	UG/KG	6750
B167	B167-5	1/17/06	5	6	Area 3	UG/KG	<6250
B167	B167-10	1/17/06	10	11	Area 3	UG/KG	<6250
B168	B168-2	1/17/06	2	3	Area 3	UG/KG	2830000
B168	B168-5	1/17/06	5	6	Area 3	UG/KG	6250
B168	B168-10	1/17/06	10	11	Area 3	UG/KG	18750
B169	B169-2	1/17/06	2	3	Area 3	UG/KG	5810000
B169	B169-5	1/17/06	5	6	Area 3	UG/KG	38750
B169	B169-10	1/17/06	10	11	Area 3	UG/KG	<6250
B170	B170-2	1/18/06	2	3	Area 3	UG/KG	16250
B170	B170-5	1/18/06	5	6	Area 3	UG/KG	11875
B170	B170-10	1/18/06	10	11	Area 3	UG/KG	365000
B171	B171-2	1/11/06	2	3	Area 3	UG/KG	843750
B171	B171-5	1/11/06	5	6	Area 3	UG/KG	160000
B171	B171-10	1/11/06	10	11	Area 3	UG/KG	210000
B172	B172-2	1/12/06	2	3	Area 3	UG/KG	1056250
B172	B172-5	1/12/06	5	6	Area 3	UG/KG	<6250
B172	B172-10	1/12/06	10	11	Area 3	UG/KG	<6250
B173	B173-2	1/12/06	2	3	Area 3	UG/KG	<6250
B173	B173-5	1/12/06	5	6	Area 3	UG/KG	<6250
B173	B173-10	1/12/06	10	11	Area 3	UG/KG	<6250
B174	B174-2	1/12/06	2	3	Area 3	UG/KG	625000
B174	B174-5	1/12/06	5	6	Area 3	UG/KG	<6250
B174	B174-10	1/12/06	10	11	Area 3	UG/KG	<6250
B175	B175-2	2/7/06	2	3	Area 3	UG/KG	<6250
B175	B175-5	2/7/06	5	6	Area 3	UG/KG	107500
B175	B175-10	2/7/06	10	11	Area 3	UG/KG	6250
B176	B176-2	2/7/06	2	3	Area 3	UG/KG	422500
B176	B176-5	2/7/06	5	6	Area 3	UG/KG	875000
B176	B176-10	2/7/06	10	11	Area 3	UG/KG	266250
B177	B177-2	2/2/06	2	3	Area 3	UG/KG	<6250
B177	B177-5	2/2/06	5	6	Area 3	UG/KG	28750
B177	B177-10	2/2/06	10	11	Area 3	UG/KG	<6250
B178	B178-2	2/2/06	2	3	Area 3	UG/KG	101250
B178	B178-5	2/2/06	5	6	Area 3	UG/KG	<6250
B178	B178-10	2/2/06	10	11	Area 3	UG/KG	7500
B179	B179-2	1/26/06	2	3	Area 3	UG/KG	1250000
B179	B179-5	1/26/06	5	6	Area 3	UG/KG	846250
B179	B179-10	1/26/06	10	11	Area 3	UG/KG	<312500
B180	B180-2	1/26/06	2	3	Area 3	UG/KG	<6250
B180	B180-5	1/26/06	5	6	Area 3	UG/KG	<6250
B180	B180-10	1/26/06	10	11	Area 3	UG/KG	6500
B181	B181-2	2/6/06	2	3	Area 3	UG/KG	13750
B181	B181-5	2/6/06	5	6	Area 3	UG/KG	3087500
B181	B181-10	2/6/06	10	11	Area 3	UG/KG	7000
B182	B182-2	1/24/06	2	3	Area 3	UG/KG	7125
B182	B182-5	1/25/06	5	6	Area 3	UG/KG	388750
B182	B182-10	1/25/06	10	11	Area 3	UG/KG	7000

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
B183	B183-2	1/25/06	2	3	Area 3	UG/KG	2500000
B183	B183-5	1/25/06	5	6	Area 3	UG/KG	1050000
B183	B183-10	1/25/06	10	11	Area 3	UG/KG	14500000
B184	B184-2	1/25/06	2	3	Area 3	UG/KG	2162500
B184	B184-5	1/25/06	5	6	Area 3	UG/KG	13750
B184	B184-10	1/25/06	10	11	Area 3	UG/KG	6625
B185	B185-2	1/26/06	2	3	Area 3	UG/KG	1562500
B185	B185-5	1/26/06	5	6	Area 3	UG/KG	9750
B185	B185-10	1/26/06	10	11	Area 3	UG/KG	<6250
B186	B186-2	1/27/06	2	3	Area 3	UG/KG	248750
B186	B186-5	1/27/06	5	6	Area 3	UG/KG	<6250
B186	B186-10	1/27/06	10	11	Area 3	UG/KG	<6250
B187	B187-2	1/27/06	2	3	Area 3	UG/KG	28750
B187	B187-5	1/27/06	5	6	Area 3	UG/KG	<6250
B187	B187-10	1/27/06	10	11	Area 3	UG/KG	50000
B188	B188-2	2/7/06	2	3	Area 2	UG/KG	<6250
B188	B188-5	2/7/06	5	6	Area 2	UG/KG	4560000
B188	B188-10	2/7/06	10	11	Area 2	UG/KG	147500
B189	B189-2	2/7/06	2	3	Area 2	UG/KG	11250
B189	B189-5	2/7/06	5	6	Area 2	UG/KG	335000
B189	B189-10	2/7/06	10	11	Area 2	UG/KG	21250
B190	B190-2	2/8/06	2	3	Area 2	UG/KG	<6250
B190	B190-5	2/8/06	5	6	Area 2	UG/KG	<6250
B190	B190-10	2/8/06	10	11	Area 2	UG/KG	<6250
B191	B191-2	2/1/06	2	3	Area 2	UG/KG	310000
B191	B191-5	2/1/06	5	6	Area 2	UG/KG	<125000
B191	B191-10	2/1/06	10	11	Area 2	UG/KG	323000
B192	B192-2	2/1/06	2	3	Area 2	UG/KG	601250
B192	B192-5	2/1/06	5	6	Area 2	UG/KG	7125
B192	B192-10	2/1/06	10	11	Area 2	UG/KG	<6250
B193	B193-2	2/6/06	2	3	Area 3	UG/KG	23750
B193	B193-5	2/6/06	5	6	Area 3	UG/KG	9125
B193	B193-10	2/6/06	10	11	Area 3	UG/KG	7250
B194	B194-2	2/3/06	2	3	Area 3	UG/KG	158750
B194	B194-5	2/3/06	5	6	Area 3	UG/KG	<6250
B194	B194-10	2/3/06	10	11	Area 3	UG/KG	4280000
B195	B195-2	2/3/06	2	3	Area 3	UG/KG	93750
B195	B195-5	2/3/06	5	6	Area 3	UG/KG	6500
B195	B195-10	2/3/06	10	11	Area 3	UG/KG	<6250
B196	B196-2	1/25/06	2	3	Area 3	UG/KG	<6250
B196	B196-5	1/25/06	5	6	Area 3	UG/KG	<6250
B196	B196-10	1/25/06	10	11	Area 3	UG/KG	7750
B197	B197-2	2/1/06	2	3	Area 3	UG/KG	6625
B197	B197-5	2/1/06	5	6	Area 3	UG/KG	<6250
B197	B197-10	2/1/06	10	11	Area 3	UG/KG	<6250
B198	B198-2	1/26/06	2	3	Area 3	UG/KG	<6250
B198	B198-5	1/26/06	5	6	Area 3	UG/KG	<6250
B198	B198-10	1/26/06	10	11	Area 3	UG/KG	<6250
B199	B199-2	1/23/06	2	3	Area 3	UG/KG	416250
B199	B199-5	1/23/06	5	6	Area 3	UG/KG	1700000
B199	B199-10	1/23/06	10	11	Area 3	UG/KG	748750
B200	B200-2	1/24/06	2	3	Area 3	UG/KG	<6250
B200	B200-5	1/24/06	5	6	Area 3	UG/KG	<6250
B200	B200-10	1/24/06	10	11	Area 3	UG/KG	<6250
B201	B201-2	1/25/06	2	3	Area 3	UG/KG	<6250
B201	B201-5	1/25/06	5	6	Area 3	UG/KG	<6250
B201	B201-10	1/25/06	10	11	Area 3	UG/KG	<6250
B202	B202-2	1/25/06	2	3	Area 3	UG/KG	6875
B202	B202-5	1/25/06	5	6	Area 3	UG/KG	6375
B202	B202-10	1/25/06	10	11	Area 3	UG/KG	<6250
B203	B203-2	2/7/06	2	3	Area 3	UG/KG	997500
B203	B203-5	2/7/06	5	6	Area 3	UG/KG	25500000
B203	B203-10	2/7/06	10	11	Area 3	UG/KG	121250
B204	B204-2	2/6/06	2	3	Area 3	UG/KG	7625
B204	B204-5	2/6/06	5	6	Area 3	UG/KG	5350000
B204	B204-10	2/6/06	10	11	Area 3	UG/KG	<6250
B205	B205-2	2/7/06	2	3	Area 3	UG/KG	370000

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
B205	B205-5	2/7/06	5	6	Area 3	UG/KG	6750
B205	B205-10	2/7/06	10	11	Area 3	UG/KG	47500
B206	B206-2	2/8/06	2	3	Area 2	UG/KG	107500
B206	B206-5	2/8/06	5	6	Area 2	UG/KG	<6250
B206	B206-10	2/8/06	10	11	Area 2	UG/KG	<6250
B207	B207-2	2/8/06	2	3	Area 2	UG/KG	536250
B207	B207-5	2/8/06	5	6	Area 2	UG/KG	<6250
B207	B207-10	2/8/06	10	11	Area 2	UG/KG	<6250
B208	B208-2	1/31/06	2	3	Area 2	UG/KG	225000
B208	B208-5	1/31/06	5	6	Area 2	UG/KG	<6250
B208	B208-10	1/31/06	10	11	Area 2	UG/KG	<6250
B209	B209-2	1/31/06	2	3	Area 2	UG/KG	547500
B209	B209-5	1/31/06	5	6	Area 2	UG/KG	342500
B209	B209-10	1/31/06	10	11	Area 2	UG/KG	2175000
B210	B210-2	1/31/06	2	3	Area 3	UG/KG	412500
B210	B210-5	1/31/06	5	6	Area 3	UG/KG	6625
B210	B210-10	1/31/06	10	11	Area 3	UG/KG	<6250
B211	B211-2	2/6/06	2	3	Area 3	UG/KG	662500
B211	B211-5	2/6/06	5	6	Area 3	UG/KG	893750
B211	B211-10	2/6/06	10	11	Area 3	UG/KG	127500
B212	B212-2	1/24/06	2	3	Area 3	UG/KG	6375
B212	B212-5	1/24/06	5	6	Area 3	UG/KG	8250
B212	B212-10	1/24/06	10	11	Area 3	UG/KG	<6250
B213	B213-2	2/6/06	2	3	Area 3	UG/KG	40000
B213	B213-5	2/6/06	5	6	Area 3	UG/KG	8750
B213	B213-10	2/6/06	10	11	Area 3	UG/KG	7500
B214	B214-2	1/23/06	2	3	Area 3	UG/KG	2725000
B214	B214-5	1/23/06	5	6	Area 3	UG/KG	7250
B214	B214-10	1/23/06	10	11	Area 3	UG/KG	7250
B215	B215-2	2/3/06	2	3	Area 3	UG/KG	85000
B215	B215-5	2/3/06	5	6	Area 3	UG/KG	<6250
B215	B215-10	2/3/06	10	11	Area 3	UG/KG	<6250
B216	B216-2	2/2/06	2	3	Area 3	UG/KG	7625
B216	B216-5	2/2/06	5	6	Area 3	UG/KG	6250
B216	B216-10	2/2/06	10	11	Area 3	UG/KG	<6250
B217	B217-2	1/24/06	2	3	Area 3	UG/KG	<6250
B217	B217-5	1/24/06	5	6	Area 3	UG/KG	<6250
B217	B217-10	1/24/06	10	11	Area 3	UG/KG	<6250
B218	B218-2	2/8/06	2	3	Area 3	UG/KG	883750
B218	B218-5	2/8/06	5	6	Area 3	UG/KG	707500
B218	B218-10	2/8/06	10	11	Area 3	UG/KG	<6250
B219	B219-2	1/26/06	2	3	Area 3	UG/KG	7000
B219	B219-5	1/26/06	5	6	Area 3	UG/KG	<6250
B219	B219-10	1/26/06	10	11	Area 3	UG/KG	<6250
B220	B220-2	1/26/06	2	3	Area 3	UG/KG	2325000
B220	B220-5	1/26/06	5	6	Area 3	UG/KG	150000
B220	B220-10	1/26/06	10	11	Area 3	UG/KG	<6250
B221	B221-2	1/27/06	2	3	Area 2	UG/KG	<6250
B221	B221-5	1/27/06	5	6	Area 2	UG/KG	6250
B221	B221-10	1/27/06	10	11	Area 2	UG/KG	<6250
B222	B222-2	2/3/06	2	3	Area 2	UG/KG	<6250
B222	B222-5	2/3/06	5	6	Area 2	UG/KG	<6250
B222	B222-10	2/3/06	10	11	Area 2	UG/KG	<6250
B223	B223-2	2/3/06	2	3	Area 2	UG/KG	<6250
B223	B223-5	2/3/06	5	6	Area 2	UG/KG	<6250
B223	B223-10	2/3/06	10	11	Area 2	UG/KG	<6250
B224	B224-05	1/21/08	5	6	Area 1	UG/KG	4550000
B226	B226-5	1/18/08	5	6	Area 1	UG/KG	94600
B226	B226-10	1/18/08	9	10	Area 1	UG/KG	71200
B227	B227-5	1/21/08	5	6	Area 1	UG/KG	1139000
B227	B227-10	1/21/08	10	11	Area 1	UG/KG	1790000
B228	B228-05	1/18/08	5	6	Area 1	UG/KG	4190000
B228	B228-10	1/18/08	10	11	Area 1	UG/KG	1420200
B229	B229-05	1/18/08	5	6	Area 1	UG/KG	1146000
B229	B229-10	1/18/08	10	11	Area 1	UG/KG	602000
B230	B230-5	1/17/08	5	6	Area 1	UG/KG	26000
B230	B230-10	1/17/08	9	10	Area 1	UG/KG	694900

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
B232	B232-05	1/21/08	5	6	Area 3	UG/KG	177400
B232	B232-10	1/21/08	10	11	Area 3	UG/KG	980
B234	B234-05	1/23/08	5	6	Area 4	UG/KG	136000
B235	B235-5	1/25/08	5	6	Area 4	UG/KG	360
B235	B235-10	1/25/08	9	10	Area 4	UG/KG	234000
B236	B236-05	1/22/08	5	6	Area 3	UG/KG	706000
B236	B236-10	1/22/08	10	11	Area 3	UG/KG	3153
B237	B237-5	1/23/08	5	6	Area 3	UG/KG	5650000
B237	B237-10	1/23/08	10	11	Area 3	UG/KG	2400000
B238	B238-5	1/25/08	5	6	Area 3	UG/KG	1100000
B238	B238-10	1/25/08	10	11	Area 3	UG/KG	649000
B239	B239-05	1/22/08	5	6	Area 3	UG/KG	1350000
B240	B240-10	1/22/08	9	10	Area 3	UG/KG	39500
B241	B241-5	1/23/08	5	6	Area 3	UG/KG	20500
B241	B241-10	1/23/08	10	11	Area 3	UG/KG	310
B242	B242-05	1/25/08	5	6	Area 3	UG/KG	1510000
B243	B243-05	1/25/08	5	6	Area 3	UG/KG	600000
B243	B243-10	1/25/08	10	11	Area 3	UG/KG	7100000
B246	B246-5	1/15/08	5	6	Area 1	UG/KG	209000
B246	B246-10	1/15/08	10	11	Area 1	UG/KG	3140000
B247	B247-05	1/17/08	5	6	Area 1	UG/KG	183000
B249	B249-05	1/14/08	5	6	Area 1	UG/KG	36800
B249	B249-10	1/14/08	10	11	Area 1	UG/KG	1235
B250	B250-05	1/16/08	5	6	Area 1	UG/KG	39900
B252	B252-5	1/15/08	5	6	Area 1	UG/KG	16200
B253	B253-05	1/31/08	5	6	Area 4	UG/KG	7286000
B253	B253-10	1/31/08	10	11	Area 4	UG/KG	1321000
B254	B254-05	2/5/08	5	6	Area 4	UG/KG	35500
B255	B255-05	1/31/08	5	6	Area 3	UG/KG	360000
B257	B257-05	1/30/08	5	6	Area 3	UG/KG	6140000
B257	B257-10	1/30/08	10	11	Area 3	UG/KG	367800
B258	B258-05	1/31/08	5	6	Area 3	UG/KG	305100
B258	B258-10	1/31/08	10	11	Area 3	UG/KG	1752500
B260	B260-05	2/1/08	5	6	Area 3	UG/KG	922000
B261	B261-5	1/21/09	4.5	5.5	Area 3	UG/KG	18800000
B263	B263-05	2/4/08	5	6	Area 3	UG/KG	1132000
B266	B266-10	1/14/08	10	11	Area 1	UG/KG	1270
B271	B271-10	1/14/08	10	11	Area 1	UG/KG	1224
B272	B272-5	1/14/08	5	6	Area 1	UG/KG	711
B272	B272-10	1/14/08	10	11	Area 1	UG/KG	2080
B274	B274-05	1/14/08	5	6	Area 1	UG/KG	411000
B274	B274-10	1/14/08	10	11	Area 1	UG/KG	536000
B275	B275-5	1/14/08	5	6	Area 1	UG/KG	2732
B275	B275-10	1/14/08	10	11	Area 1	UG/KG	2230
B276	B276-05	2/4/08	5	6	Area 3	UG/KG	1120000
B277	B277-5	1/16/08	5	6	Area 3	UG/KG	482910
B277	B277-10	1/16/08	10	11	Area 3	UG/KG	1900
B278	B278-5	1/16/08	5	6	Area 1	UG/KG	9630000
B278	B278-10	1/16/08	10	11	Area 1	UG/KG	3925000
B279	B279-5	1/16/08	5	6	Area 1	UG/KG	2220000
B279	B279-10	1/16/08	10	11	Area 1	UG/KG	5560000
B280	B280-5	1/16/08	5	6	Area 1	UG/KG	833000
B280	B280-10	1/16/08	10	11	Area 1	UG/KG	4960000
B281	B281-5	1/14/08	5	6	Area 1	UG/KG	1888.4
B281	B281-10	1/14/08	10	11	Area 1	UG/KG	1052100
B282	B282-05	1/28/08	5	6	Area 1	UG/KG	50700
B282	B282-10	1/28/08	10	11	Area 1	UG/KG	3440
B283	B283-05	1/29/08	5	6	Area 1	UG/KG	364000
B284	B284-05	1/28/08	5	6	Area 2	UG/KG	216000
B285	B285-05	1/28/08	5	6	Area 2	UG/KG	591000
B285	B285-10	1/28/08	10	11	Area 2	UG/KG	2009
B286	B286-5	1/22/09	5	6	Area 2	UG/KG	486000
B286	B286-10	1/22/09	10	11	Area 2	UG/KG	868000
B287	B287-5	1/22/08	5	6	Area 2	UG/KG	59400
B287	B287-10	1/22/08	10	11	Area 2	UG/KG	125000
B289	B289-5	1/28/08	5	6	Area 2	UG/KG	64600
B290	B290-5	1/28/08	5	6	Area 2	UG/KG	1250000

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
B290	B290-10	1/28/08	10	11	Area 2	UG/KG	1720000
B291	B291-10	1/29/08	10	11	Area 2	UG/KG	95400
B292	B292-5	1/22/09	5	6	Area 2	UG/KG	831000
B292	B292-10	1/22/09	10	11	Area 2	UG/KG	204500
B294	B294-05	1/31/08	4.5	5	Area 2	UG/KG	166600
B294	B294-10	1/31/08	10	11	Area 2	UG/KG	397000
B295	B295-5	1/22/09	5	6	Area 2	UG/KG	14200
B297	B297-5	1/20/09	4.5	5.5	Area 2	UG/KG	14800
B299	B299-5	1/19/09	5	6	Area 4	UG/KG	892000
B299	B299-10	1/19/09	9.5	10.5	Area 4	UG/KG	9794000
B301	B301-05	2/6/08	5	6	Area 4	UG/KG	107400
B301	B301-10	2/6/08	10	11	Area 4	UG/KG	900
B303	B303-05	1/28/08	5	6	Area 4	UG/KG	3578000
B303	B303-10	1/28/08	10	11	Area 4	UG/KG	3076000
B304	B304-5	1/19/09	4.5	5.5	Area 3	UG/KG	95600
B305	B305-5	1/19/09	4.5	5.5	Area 3	UG/KG	167400
B306	B306-05	1/31/08	5	6	Area 3	UG/KG	156000
B306	B306-10	1/31/08	10	11	Area 3	UG/KG	276000
B307	B307-5	1/28/08	5	6	Area 3	UG/KG	5300
B307	B307-10	1/28/08	10	11	Area 3	UG/KG	3500
B308	B308-05	1/30/08	5	6	Area 3	UG/KG	876000
B309	B309-5	1/19/09	4.5	5.5	Area 3	UG/KG	38200
B310	B310-05	2/4/08	5	6	Area 3	UG/KG	110000
B311	B311-05	2/5/08	5	6	Area 3	UG/KG	3270000
B315	B315-05	1/30/08	4.5	5.5	Area 3	UG/KG	1330000
B315	B315-10	1/30/08	10	11	Area 3	UG/KG	3580000
B316	B316-05	1/30/08	4.5	5.5	Area 3	UG/KG	1059000
B316	B316-10	1/30/08	10	11	Area 3	UG/KG	6810000
B317	B317-05	1/29/08	4.5	5.5	Area 3	UG/KG	1760
B317	B317-10	1/29/08	10	11	Area 3	UG/KG	1640
B318	B318-05	1/28/08	4.5	5.5	Area 2	UG/KG	171000
B319	B319-10	1/21/09	10	11	Area 2	UG/KG	37800
B320	B320-10	1/29/08	10	11	Area 3	UG/KG	695000
B322	B322-05	2/1/08	5	6	Area 3	UG/KG	833000
B323	B323-05	1/28/08	4.5	5.5	Area 3	UG/KG	70200
B324	B324-00	4/8/08	0	0.5	Area 4	UG/KG	249900
B325	B325-00	4/8/08	0	0.5	Area 4	UG/KG	265000
B326	B326-00	4/8/08	0	0.5	Area 4	UG/KG	65500
B-401	LL_B-401-1_100611	10/6/11	0.5	1	Area 2	UG/KG	340000
B-401	LL_B-401-3_100611	10/6/11	2.5	3	Area 2	UG/KG	86000
B-401	LL_B-401-6_100611	10/6/11	5.5	6	Area 2	UG/KG	<10000
B-401	LL_B-401-9_100611	10/6/11	8.5	9	Area 2	UG/KG	<10000
B-402	LL_B-402-1_100611	10/6/11	0.5	1	Area 2	UG/KG	1600000
B-402	LL_B-402-3_100611	10/6/11	2.5	3	Area 2	UG/KG	410000
B-402	LL_B-402-6_100611	10/6/11	5.5	6	Area 2	UG/KG	<10000
B-402	LL_B-402-9_100611	10/6/11	8.5	9	Area 2	UG/KG	<10000
B-403	LL_B-403-1_100711	10/7/11	0.5	1	Area 2	UG/KG	400000
B-403	LL_B-403-3_100711	10/7/11	2.5	3	Area 2	UG/KG	1100000
B-403	LL_B-403-6_100711	10/7/11	5.5	6	Area 2	UG/KG	100000
B-403	LL_B-403-9_100711	10/7/11	8.5	9	Area 2	UG/KG	<10000
B-404	LL_B-404-1_100711	10/7/11	0.5	1	Area 2	UG/KG	30000000
B-404	LL_B-404-3_100711	10/7/11	2.5	3	Area 2	UG/KG	8300000
B-404	LL_B-404-6_100711	10/7/11	5.5	6	Area 2	UG/KG	2900000
B-404	LL_B-404-9_100711	10/7/11	8.5	9	Area 2	UG/KG	8200000
B-405	LL_B-405-1_100711	10/7/11	0.5	1	Area 2	UG/KG	5600000
B-405	LL_B-405-3_100711	10/7/11	2.5	3	Area 2	UG/KG	7000000
B-406	LL_B-406-1_100711	10/7/11	0.5	1	Area 2	UG/KG	3400000
B-406	LL_B-406-3_100711	10/7/11	2.5	3	Area 2	UG/KG	3100000
B-406	LL_B-406-6_100711	10/7/11	5.5	6	Area 2	UG/KG	3200000
B-406	LL_B-406-9_100711	10/7/11	8.5	9	Area 2	UG/KG	6400000
B-407	LL_B-407-1_100711	10/7/11	0.5	1	Area 2	UG/KG	6400000
B-407	LL_B-407-3_100711	10/7/11	2.5	3	Area 2	UG/KG	4000000
B-407	LL_B-407-6_100711	10/7/11	5.5	6	Area 2	UG/KG	1800000
B-407	LL_B-407-9_100711	10/7/11	8.5	9	Area 2	UG/KG	1700000
B-408	LL_B-408-1_100711	10/7/11	0.5	1	Area 2	UG/KG	740000
B-408	LL_B-408-3_100711	10/7/11	2.5	3	Area 2	UG/KG	470000
B-408	LL_B-408-6_100711	10/7/11	5.5	6	Area 2	UG/KG	240000

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
B-408	LL_B-408-9_100711	10/7/11	8.5	9	Area 2	UG/KG	41000
B-409	LL_B-409-1_100711	10/7/11	0.5	1	Area 2	UG/KG	1600000
B-409	LL_B-409-3_100711	10/7/11	2.5	3	Area 2	UG/KG	460000
B-409	LL_B-409-6_100711	10/7/11	5.5	6	Area 2	UG/KG	1700000
B-409	LL_B-409-9_100711	10/7/11	8.5	9	Area 2	UG/KG	4500000
B-410	LL_B-410-1_100711	10/7/11	0.5	1	Area 2	UG/KG	850000
B-410	LL_B-410-3_100711	10/7/11	2.5	3	Area 2	UG/KG	1900000
B-410	LL_B-410-6_100711	10/7/11	5.5	6	Area 2	UG/KG	20000
B-410	LL_B-410-9_100711	10/7/11	8.5	9	Area 2	UG/KG	640000
B-411	LL_B-411-1_100611	10/6/11	0.5	1	Area 1	UG/KG	120000
B-411	LL_B-411-3_100611	10/6/11	2.5	3	Area 1	UG/KG	99000
B-411	LL_B-411-6_100611	10/6/11	5.5	6	Area 1	UG/KG	50000
B-411	LL_B-411-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<10000
B-412	LL_B-412-1_100611	10/6/11	0.5	1	Area 1	UG/KG	180000
B-412	LL_B-412-3_100611	10/6/11	2.5	3	Area 1	UG/KG	440000
B-412	LL_B-412-6_100611	10/6/11	5.5	6	Area 1	UG/KG	27000
B-412	LL_B-412-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<10000
B-413	LL_B-413-1_100611	10/6/11	0.5	1	Area 1	UG/KG	1500000
B-413	LL_B-413-3_100611	10/6/11	2.5	3	Area 1	UG/KG	11000000
B-413	LL_B-413-6_100611	10/6/11	5.5	6	Area 1	UG/KG	2700000
B-413	LL_B-413-9_100611	10/6/11	8.5	9	Area 1	UG/KG	9200000
B-414	LL_B-414-1_100611	10/6/11	0.5	1	Area 1	UG/KG	1200000
B-414	LL_B-414-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<10000
B-414	LL_B-414-6_100611	10/6/11	5.5	6	Area 1	UG/KG	19000
B-414	LL_B-414-9_100611	10/6/11	8.5	9	Area 1	UG/KG	270000
B-415	LL_B-415-1_100611	10/6/11	0.5	1	Area 1	UG/KG	140000
B-415	LL_B-415-3_100611	10/6/11	2.5	3	Area 1	UG/KG	390000
B-415	LL_B-415-6_100611	10/6/11	5.5	6	Area 1	UG/KG	180000
B-415	LL_B-415-9_100611	10/6/11	8.5	9	Area 1	UG/KG	18000
B-416	LL_B-416-1_100611	10/6/11	0.5	1	Area 1	UG/KG	4800000
B-416	LL_B-416-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<10000
B-416	LL_B-416-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<10000
B-416	LL_B-416-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<10000
B-417	LL_B-417-1_100611	10/6/11	0.5	1	Area 1	UG/KG	<10000
B-417	LL_B-417-3_100611	10/6/11	2.5	3	Area 1	UG/KG	220000
B-417	LL_B-417-6_100611	10/6/11	5.5	6	Area 1	UG/KG	2100000
B-417	LL_B-417-9_100611	10/6/11	8.5	9	Area 1	UG/KG	3300000
B-418	LL_B-418-1_100611	10/6/11	0.5	1	Area 1	UG/KG	440000
B-418	LL_B-418-3_100611	10/6/11	2.5	3	Area 1	UG/KG	180000
B-418	LL_B-418-6_100611	10/6/11	5.5	6	Area 1	UG/KG	640000
B-418	LL_B-418-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<10000
B-419	LL_B-419-1_100611	10/6/11	0.5	1	Area 1	UG/KG	360000
B-419	LL_B-419-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<10000
B-419	LL_B-419-6_100611	10/6/11	5.5	6	Area 1	UG/KG	<10000
B-419	LL_B-419-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<10000
B-420	LL_B-420-1_100611	10/6/11	0.5	1	Area 1	UG/KG	84000
B-420	LL_B-420-3_100611	10/6/11	2.5	3	Area 1	UG/KG	<10000
B-420	LL_B-420-6_100611	10/6/11	5.5	6	Area 1	UG/KG	96000
B-420	LL_B-420-9_100611	10/6/11	8.5	9	Area 1	UG/KG	<10000
B-421	LL_B-421-1_100511	10/5/11	0.5	1	Area 3	UG/KG	440000
B-421	LL_B-421-3_100511	10/5/11	2.5	3	Area 3	UG/KG	<10000
B-421	LL_B-421-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<10000
B-421	LL_B-421-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<10000
B-422	LL_B-422-1_100511	10/5/11	0.5	1	Area 3	UG/KG	110000
B-422	LL_B-422-3_100511	10/5/11	2.5	3	Area 3	UG/KG	73000
B-422	LL_B-422-6_100611	10/6/11	5.5	6	Area 3	UG/KG	140000
B-422	LL_B-422-9_100611	10/6/11	8.5	9	Area 3	UG/KG	220000
B-423	LL_B-423-1_100711	10/7/11	0.5	1	Area 3	UG/KG	170000
B-423	LL_B-423-3_100711	10/7/11	2.5	3	Area 3	UG/KG	290000
B-423	LL_B-423-6_100711	10/7/11	5.5	6	Area 3	UG/KG	160000
B-423	LL_B-423-9_100711	10/7/11	8.5	9	Area 3	UG/KG	70000
B-424	LL_B-424-1_100511	10/5/11	0.5	1	Area 3	UG/KG	620000
B-424	LL_B-424-3_100511	10/5/11	2.5	3	Area 3	UG/KG	500000
B-424	LL_B-424-6_100511	10/5/11	5.5	6	Area 3	UG/KG	160000
B-424	LL_B-424-9_100511	10/5/11	8.5	9	Area 3	UG/KG	130000
B-425	LL_B-425-1_100511	10/5/11	0.5	1	Area 3	UG/KG	1900000
B-425	LL_B-425-3_100511	10/5/11	2.5	3	Area 3	UG/KG	2200000

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
B-425	LL_B-425-6_100511	10/5/11	5.5	6	Area 3	UG/KG	240000
B-425	LL_B-425-9_100511	10/5/11	8.5	9	Area 3	UG/KG	3400000
B-426	LL_B-426-1_100511	10/5/11	0.5	1	Area 3	UG/KG	1800000
B-426	LL_B-426-3_100511	10/5/11	2.5	3	Area 3	UG/KG	19000
B-426	LL_B-426-6_100511	10/5/11	5.5	6	Area 3	UG/KG	59000
B-426	LL_B-426-9_100511	10/5/11	8.5	9	Area 3	UG/KG	63000
B-427	LL_B-427-1_100511	10/5/11	0.5	1	Area 3	UG/KG	1600000
B-427	LL_B-427-3_100511	10/5/11	2.5	3	Area 3	UG/KG	27000
B-427	LL_B-427-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<10000
B-427	LL_B-427-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<10000
B-428	LL_B-428-1_100511	10/5/11	0.5	1	Area 3	UG/KG	9700000
B-428	LL_B-428-3_100511	10/5/11	2.5	3	Area 3	UG/KG	2000000
B-428	LL_B-428-6_100511	10/5/11	5.5	6	Area 3	UG/KG	690000
B-428	LL_B-428-9_100511	10/5/11	8.5	9	Area 3	UG/KG	390000
B-429	LL_B-429-1_100511	10/5/11	0.5	1	Area 3	UG/KG	1500000
B-429	LL_B-429-3_100511	10/5/11	2.5	3	Area 3	UG/KG	330000
B-429	LL_B-429-6_100511	10/5/11	5.5	6	Area 3	UG/KG	<10000
B-429	LL_B-429-9_100511	10/5/11	8.5	9	Area 3	UG/KG	<10000
B-430	LL_B-430-1_100511	10/5/11	0.5	1	Area 3	UG/KG	1100000
B-430	LL_B-430-3_100511	10/5/11	2.5	3	Area 3	UG/KG	550000
B-430	LL_B-430-6_100511	10/5/11	5.5	6	Area 3	UG/KG	340000
B-430	LL_B-430-9_100511	10/5/11	8.5	9	Area 3	UG/KG	260000
S001	S001-0"	12/4/07	0	0.5	Area 4	UG/KG	1038000
S002	S002-0"	12/4/07	0	0.5	Area 4	UG/KG	1123000
S003ALT	S003ALT-0"	12/20/07	0	0.5	Area 4	UG/KG	921000
S004	S004-0"	1/4/08	0	0.5	Area 4	UG/KG	716300
S004	S004-12"	1/4/08	1	1.5	Area 4	UG/KG	19500
S005	S005-0"	12/18/07	0	0.5	Area 4	UG/KG	3400000
S006	S006-0"	12/17/07	0	0.5	Area 4	UG/KG	2330000
S006	S006-12"	12/17/07	1	1.5	Area 4	UG/KG	3780000
S007	S007-0"	12/17/07	0	0.5	Area 4	UG/KG	7110000
S008	S008-0"	12/17/07	0	0.5	Area 4	UG/KG	798000
S009	S009-0"	12/17/07	0	0.5	Area 4	UG/KG	373000
S009	S009-12"	12/17/07	1	1.5	Area 4	UG/KG	521000
S010	S010-6''	1/19/09	0.5	1	Area 4	UG/KG	1272200
S011	S011-0"	12/17/07	0	0.5	Area 4	UG/KG	5130000
S011	S011-12"	12/17/07	1	1.5	Area 4	UG/KG	4390000
S012	S012B-0"	12/18/07	0	0.5	Area 4	UG/KG	2184000
S013	S013-0"	1/4/08	0	0.5	Area 4	UG/KG	1340000
S014	S014-0"	12/4/07	0	0.5	Area 4	UG/KG	435000
S015	S015-0"	12/4/07	0	0.5	Area 4	UG/KG	7030000
S016	S016B-0"	1/2/08	0	0.5	Area 4	UG/KG	9680000
S016	S016B-12"	1/2/08	1	1.5	Area 4	UG/KG	2960
S017	S017-0"	12/4/07	0	0.5	Area 4	UG/KG	1244000
S018	S018-0"	12/20/07	0	0.5	Area 4	UG/KG	302700
S019	S019-0"	12/18/07	0	0.5	Area 4	UG/KG	669000
S020	S020-0"	12/18/07	0	0.5	Area 4	UG/KG	14500000
S020	S020-12"	12/18/07	1	1.5	Area 4	UG/KG	11000000
S021	S021-6''	1/19/09	0.5	1	Area 4	UG/KG	669000
S022	S022-0"	12/17/07	0	0.5	Area 4	UG/KG	1041000
S023	S023-0"	12/17/07	0	0.5	Area 3	UG/KG	764000
S024	S024-0"	12/17/07	0	0.5	Area 3	UG/KG	93300
S025	S025-0"	12/18/07	0	0.5	Area 3	UG/KG	10800000
S025	S025-12"	12/18/07	1	1.5	Area 3	UG/KG	1530000
S026	S026-0"	12/18/07	0	0.5	Area 3	UG/KG	9350000
S026	S026-12"	12/18/07	1	1.5	Area 3	UG/KG	16800000
S027	S027-0"	12/20/07	0	0.5	Area 3	UG/KG	13650000
S028	S028-0"	12/4/07	0	0.5	Area 3	UG/KG	272000
S029	S029-0"	12/4/07	0	0.5	Area 3	UG/KG	18200000
S029	S029-18"	12/4/07	1.5	2	Area 3	UG/KG	5480000
S030	S030-12"	12/4/07	1	1.5	Area 3	UG/KG	20200000
S031	S031-0"	12/4/07	0	0.5	Area 3	UG/KG	3390000
S032	S032-0"	12/4/07	0	0.5	Area 3	UG/KG	3850000
S033	S033-0"	12/4/07	0	0.5	Area 3	UG/KG	8620000
S034	S034-0"	12/4/07	0	0.5	Area 3	UG/KG	3290000
S035	S035-0"	12/4/07	0	0.5	Area 3	UG/KG	10900000
S036	S036-0"	12/4/07	0	0.5	Area 3	UG/KG	14500000

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
S037	S037-0"	12/4/07	0	0.5	Area 3	UG/KG	27400000
S037	S037-20"	12/4/07	1.67	2.167	Area 3	UG/KG	198000
S038	S038-0"	12/20/07	0	0.5	Area 3	UG/KG	2317000
S039	S039-0"	1/2/08	0	0.5	Area 3	UG/KG	2120000
S039	S039-12"	1/2/08	1	1.5	Area 3	UG/KG	1790000
S040	S040-0"	12/20/07	0	0.5	Area 3	UG/KG	1009000
S040	S040-12"	12/20/07	1	1.5	Area 3	UG/KG	2880000
S041	S041-0"	1/30/08	0	0.5	Area 3	UG/KG	319000
S042	S042-0"	1/30/08	0	0.5	Area 3	UG/KG	9310000
S042	S042-12"	1/30/08	1	1.5	Area 3	UG/KG	9160000
S043	S043-0"	1/30/08	0	0.5	Area 3	UG/KG	192000
S044	S044-0"	12/20/07	0	0.5	Area 3	UG/KG	1059000
S045	S045-0"	12/20/07	0	0.5	Area 3	UG/KG	257500
S046	S046-0"	12/20/07	0	0.5	Area 3	UG/KG	7630000
S047	S047-6"	1/20/09	0.5	1	Area 3	UG/KG	8320000
S048	S048-0"	1/7/08	0	0.5	Area 3	UG/KG	22900000
S049	S049-6"	1/20/09	0.5	1	Area 3	UG/KG	1200000
S050	S050-0"	12/4/07	0	0.5	Area 3	UG/KG	2414000
S051	S051-0"	12/20/07	0	0.5	Area 3	UG/KG	520000
S052	S052-0"	12/20/07	0	0.5	Area 3	UG/KG	1217000
S052	S052-12"	12/20/07	1	1.5	Area 3	UG/KG	1480000
S053	S053-0"	12/20/07	0	0.5	Area 3	UG/KG	9000000
S053	S053-12"	12/20/07	1	1.5	Area 3	UG/KG	811000
S054	S054-0"	1/30/08	0	0.5	Area 3	UG/KG	1555000
S055	S055-0"	1/30/08	0	0.5	Area 3	UG/KG	1168000
S055	S055-12"	1/30/08	1	1.5	Area 3	UG/KG	1167000
S056	S056-0"	1/30/08	0	0.5	Area 3	UG/KG	538000
S056	S056-12"	1/30/08	1	1.5	Area 3	UG/KG	246600
S057	S057-0"	1/30/08	0	0.5	Area 3	UG/KG	549000
S058	S058-0"	2/1/08	0	0.5	Area 3	UG/KG	1770000
S059	S059-0"	2/1/08	0	0.5	Area 3	UG/KG	247000
S059	S059-12"	2/1/08	1	1.5	Area 3	UG/KG	295200
S060	S060-0"	12/13/07	0	0.5	Area 3	UG/KG	2940000
S060	S060-18"	12/13/07	1.5	2	Area 3	UG/KG	26800000
S061	S061-0"	12/13/07	0	0.5	Area 3	UG/KG	2022000
S063	S063-0"	12/14/07	0	0.5	Area 3	UG/KG	191000
S064	S064-0"	12/14/07	0	0.5	Area 3	UG/KG	490000
S064	S064-18"	12/14/07	1.5	2	Area 3	UG/KG	88000
S065	S065-0"	2/1/08	0	0.5	Area 3	UG/KG	77400
S065	S065-12"	2/1/08	1	1.5	Area 3	UG/KG	11700
S066	S066-0"	12/14/07	0	0.5	Area 3	UG/KG	1522000
S067	S067-0"	12/14/07	0	0.5	Area 3	UG/KG	710600
S068	S068-0"	12/13/07	0	0.5	Area 3	UG/KG	497000
S069	S069-0"	12/13/07	0	0.5	Area 3	UG/KG	1032000
S070	S070-0"	12/13/07	0	0.5	Area 3	UG/KG	682000
S071B	S071B-12"	12/21/07	1	1.5	Area 3	UG/KG	4460
S072	S072-0"	12/4/07	0	0.5	Area 3	UG/KG	475000
S073	S073-0"	12/4/07	0	0.5	Area 3	UG/KG	344400
S074	S074-0"	12/4/07	0	0.5	Area 3	UG/KG	4730000
S075	S075-0"	12/4/07	0	0.5	Area 3	UG/KG	4320000
S076	S076-6''	1/22/09	0.5	1	Area 3	UG/KG	39800000
S078	S078-0"	2/1/08	0	0.5	Area 3	UG/KG	222000
S078	S078-12"	2/1/08	1	1.5	Area 3	UG/KG	2220
S080	S080-0"	2/1/08	0	0.5	Area 3	UG/KG	4080000
S081	S081-0"	2/1/08	0	0.5	Area 3	UG/KG	404300
S082	S082-0"	12/13/07	0	0.5	Area 3	UG/KG	5558000
S083	S083-0"	12/13/07	0	0.5	Area 3	UG/KG	9210000
S083	S083-15"	12/13/07	1.25	1.75	Area 3	UG/KG	17470000
S084	S084-0"	12/4/07	0	0.5	Area 3	UG/KG	10410000
S085	S085-0"	12/4/07	0	0.5	Area 3	UG/KG	2524000
S086	S086-6"	1/20/09	0.5	1	Area 3	UG/KG	799000
S087	S087-0"	12/13/07	0	0.5	Area 3	UG/KG	3150000
S088	S088-0"	1/2/08	0	0.5	Area 3	UG/KG	3240000
S089	S089-0"	1/2/08	0	0.5	Area 3	UG/KG	97300
S090	S090-0"	12/13/07	0	0.5	Area 3	UG/KG	9970000
S090	S090-18"	12/13/07	1.5	2	Area 3	UG/KG	5090000
S091	S091-0"	2/1/08	0	0.5	Area 3	UG/KG	17600000

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
S092	S092-0"	12/13/07	0	0.5	Area 3	UG/KG	795400
S093	S093-0"	12/4/07	0	0.5	Area 3	UG/KG	2284000
S094	S094-0"	12/4/07	0	0.5	Area 3	UG/KG	75500
S095	S095-0"	12/4/07	0	0.5	Area 3	UG/KG	662000
S096	S096-0"	12/4/07	0	0.5	Area 3	UG/KG	418000
S097	S097-6"	1/20/09	0.5	1	Area 3	UG/KG	1657600
S098	S098-0"	12/4/07	0	0.5	Area 3	UG/KG	59100
S099	S099-0"	12/13/07	0	0.5	Area 3	UG/KG	46500
S100	S100-0"	12/13/07	0	0.5	Area 3	UG/KG	225700
S101	S101-0"	12/13/07	0	0.5	Area 3	UG/KG	2208000
S102	S102-0"	12/13/07	0	0.5	Area 3	UG/KG	5270000
S102	S102-15"	12/13/07	1.25	1.75	Area 3	UG/KG	1443000
S103	S103-0"	1/3/08	0	0.5	Area 2	UG/KG	2370000
S103	S103-12"	1/3/08	1	1.5	Area 2	UG/KG	394100
S105	S105-0"	1/31/08	0	0.5	Area 2	UG/KG	8480000
S106	S106-6''	1/22/09	0.5	1	Area 2	UG/KG	77000
S106	S106-12''	1/22/09	1	1.5	Area 2	UG/KG	47300
S108	S108-0"	12/20/07	0	0.5	Area 2	UG/KG	4040000
S109	S109-0"	1/31/08	0	0.5	Area 2	UG/KG	22690000
S109	S109-12"	1/31/08	1	1.5	Area 2	UG/KG	12000000
S110	S110-6''	1/22/09	0.5	1	Area 2	UG/KG	16500000
S111	S111-0"	12/21/07	0	0.5	Area 2	UG/KG	10330000
S111	S111-12"	12/21/07	1	1.5	Area 2	UG/KG	1590000
S112	S112-6''	1/22/09	0.5	1	Area 2	UG/KG	11210000
S113	S113-0"	1/31/08	0	0.5	Area 2	UG/KG	1274000
S113	S113-12"	1/31/08	1	1.5	Area 2	UG/KG	2270000
S114	S114-0"	1/29/08	0	0.5	Area 2	UG/KG	102370
S115	S115-0"	1/29/08	0	0.5	Area 2	UG/KG	29650000
S116	S116-0"	1/29/08	0	0.5	Area 2	UG/KG	1506000
S117	S117-0"	1/31/08	0	0.5	Area 2	UG/KG	520
S118	S118-6''	1/22/09	0.5	1	Area 2	UG/KG	43700
S119	S119-0"	1/4/08	0	0.5	Area 2	UG/KG	576000
S119	S119-12"	1/4/08	1	1.5	Area 2	UG/KG	22500
S120	S120-0"	1/4/08	0	0.5	Area 2	UG/KG	424000
S121	S121-0"	1/4/08	0	0.5	Area 2	UG/KG	3360000
S121	S121-12"	1/4/08	1	1.5	Area 2	UG/KG	2980000
S123	S123-0"	11/29/07	0	0.5	Area 1	UG/KG	278600
S124	S124-0"	11/29/07	0	0.5	Area 1	UG/KG	2453000
S125	S125-0"	1/29/08	0	0.5	Area 1	UG/KG	2189000
S126	S126-0"	1/7/08	0	0.5	Area 1	UG/KG	2562000
S126	S126-12"	1/7/08	1	1.5	Area 1	UG/KG	4376000
S127	S127-0"	2/1/08	0	0.5	Area 3	UG/KG	2690000
S130	S130-0"	1/7/08	0	0.5	Area 3	UG/KG	10160000
S130	S130-12"	1/7/08	1	1.5	Area 3	UG/KG	2270000
S131	S131-0"	1/7/08	0	0.5	Area 1	UG/KG	9310000
S132	S132-0"	1/3/08	0	0.5	Area 1	UG/KG	78700
S133	S133B-0"	11/29/07	0	0.5	Area 1	UG/KG	8410000
S133	S133B-12"	11/29/07	1	1.5	Area 1	UG/KG	9860000
S134	S134-0"	1/7/08	0	0.5	Area 1	UG/KG	2782000
S135	S135-6''	1/19/09	0.5	1	Area 1	UG/KG	23500
S136	S136-0"	11/29/07	0	0.5	Area 1	UG/KG	38700000
S136	S136-24"	11/29/07	2	2.5	Area 1	UG/KG	5870000
S137	S137-0"	11/29/07	0	0.5	Area 1	UG/KG	10500000
S138	S138-0"	11/29/07	0	0.5	Area 1	UG/KG	13600000
S138	S138-18"	11/29/07	1.5	2	Area 1	UG/KG	19700000
S139	S139-12"	11/29/07	1	1.5	Area 1	UG/KG	13300000
S139	S139-24"	11/29/07	2	2.5	Area 1	UG/KG	1503500
S140	S140-12"	11/29/07	1	1.5	Area 1	UG/KG	66900
S141	S141-0"	1/7/08	0	0.5	Area 3	UG/KG	857000
S141	S141-12"	1/7/08	1	1.5	Area 3	UG/KG	101600
S142	S142-0"	1/7/08	0	0.5	Area 3	UG/KG	8070000
S143	S143-0"	1/7/08	0	0.5	Area 3	UG/KG	186600
S144B	S144B-0"	1/31/08	0	0.5	Area 3	UG/KG	1227000
S144B	S144B-12"	1/31/08	1	1.5	Area 3	UG/KG	880000
S145	S145-0"	1/7/08	0	0.5	Area 3	UG/KG	548400
S145	S145-12"	1/7/08	1	1.5	Area 3	UG/KG	491000
S146	S146-0"	11/29/07	0	0.5	Area 1	UG/KG	2501000

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
S147	S147-12"	11/29/07	1	1.5	Area 1	UG/KG	1218000
S148	S148-0"	11/29/07	0	0.5	Area 1	UG/KG	829000
S149	S149-12"	11/29/07	1	1.5	Area 1	UG/KG	20100000
S150	S150-12"	11/29/07	1	1.5	Area 1	UG/KG	2020000
S151	S151-12"	11/29/07	1	1.5	Area 1	UG/KG	2307000
S152	S152-0"	11/29/07	0	0.5	Area 1	UG/KG	4170000
S153	S153-0"	11/29/07	0	0.5	Area 1	UG/KG	2555000
S154	S154-0"	11/29/07	0	0.5	Area 1	UG/KG	1024000
S155	S155B-0"	11/29/07	0	0.5	Area 1	UG/KG	1130000
S156	S156-0"	1/7/08	0	0.5	Area 3	UG/KG	1029000
S157	S157-0"	1/2/08	0	0.5	Area 3	UG/KG	197300
S158	S158-0"	12/17/07	0	0.5	Area 3	UG/KG	6440000
S158	S158-12"	12/17/07	1	1.5	Area 3	UG/KG	6200000
S159	S159-0"	12/17/07	0	0.5	Area 3	UG/KG	337000
S160	S160-0"	1/7/08	0	0.5	Area 3	UG/KG	437600
S161	S161B-0"	11/29/07	0	0.5	Area 1	UG/KG	154700
S162	S162-12"	11/29/07	1	1.5	Area 1	UG/KG	1690000
S162	S162-24"	11/29/07	2	2.5	Area 1	UG/KG	2640
S163	S163-0"	11/29/07	0	0.5	Area 1	UG/KG	10110
S164	S164-0"	11/29/07	0	0.5	Area 1	UG/KG	2522000
S165	S165-0"	11/29/07	0	0.5	Area 1	UG/KG	7460000
S166	S166-0"	11/29/07	0	0.5	Area 1	UG/KG	1810000
S167	S167-0"	11/29/07	0	0.5	Area 1	UG/KG	320300
S168	S168-0"	11/29/07	0	0.5	Area 1	UG/KG	2500000
S169	S169-0"	11/29/07	0	0.5	Area 1	UG/KG	2148000
S170	S170-0"	1/7/08	0	0.5	Area 3	UG/KG	1463000
S171	S171-0"	12/17/07	0	0.5	Area 3	UG/KG	3610000
S171	S171-12"	12/17/07	1	1.5	Area 3	UG/KG	69890000
S172	S172-0"	12/17/07	0	0.5	Area 3	UG/KG	2780000
S173	S173-0"	12/17/07	0	0.5	Area 3	UG/KG	3140000
S174	S174-0"	12/14/07	0	0.5	Area 3	UG/KG	687000
S175A	S175A-0"	1/7/08	0	0.5	Area 3	UG/KG	2950000
S175B	S175B-0"	1/31/08	0	0.5	Area 3	UG/KG	1733000
S176	S176-0"	11/28/07	0	0.5	Area 1	UG/KG	2072000
S177	S177-0"	11/28/07	0	0.5	Area 1	UG/KG	1884000
S178	S178-0"	11/28/07	0	0.5	Area 1	UG/KG	1123000
S179	S179-0"	11/28/07	0	0.5	Area 1	UG/KG	755000
S180	S180-0"	11/28/07	0	0.5	Area 1	UG/KG	337200
S181	S181-0"	1/31/08	0	0.5	Area 3	UG/KG	221000
S182	S182-0"	12/14/07	0	0.5	Area 3	UG/KG	2320000
S183	S183-0"	12/17/07	0	0.5	Area 3	UG/KG	615000
S184	S184-0"	12/14/07	0	0.5	Area 3	UG/KG	1322000
S185	S185-6''	1/19/09	0.5	1	Area 3	UG/KG	3975000
S186	S186-0"	1/31/08	0	0.5	Area 3	UG/KG	587000
S187	S187-0"	1/4/08	0	0.5	Area 1	UG/KG	2100
S188	S188-0"	11/26/07	0	0.5	Area 1	UG/KG	109900
S189	S189-0"	11/26/07	0	0.5	Area 1	UG/KG	120800
S190	S190-0"	11/26/07	0	0.5	Area 1	UG/KG	1563000
S191	S191-0"	11/26/07	0	0.5	Area 1	UG/KG	7570000
S192	S192-0"	11/26/07	0	0.5	Area 1	UG/KG	5350000
S193	S193-0"	11/26/07	0	0.5	Area 1	UG/KG	89300
S194	S194-0"	11/26/07	0	0.5	Area 1	UG/KG	926000
S195	S195-0"	11/26/07	0	0.5	Area 1	UG/KG	3096000
S196	S196-0"	11/26/07	0	0.5	Area 1	UG/KG	3620000
S196	S196-18"	11/26/07	1.5	2	Area 1	UG/KG	2610000
S197	S197-0"	11/26/07	0	0.5	Area 1	UG/KG	128000
S198	S198-0"	11/26/07	0	0.5	Area 1	UG/KG	651000
S199	S199-12"	11/26/07	1	1.5	Area 1	UG/KG	4020000
S199	S199-24"	11/26/07	2	2.5	Area 1	UG/KG	1360000
S200	S200-0"	11/26/07	0	0.5	Area 1	UG/KG	3048000
S201	S201-0"	11/26/07	0	0.5	Area 1	UG/KG	23400000
S201	S201-18"	11/26/07	1.5	2	Area 1	UG/KG	4150000
S202	S202-0"	11/28/07	0	0.5	Area 1	UG/KG	231400
S203	S203-0"	11/28/07	0	0.5	Area 1	UG/KG	765000
S204	S204-0"	11/28/07	0	0.5	Area 1	UG/KG	523000
S205	S205-0"	11/28/07	0	0.5	Area 1	UG/KG	975000
S206	S206-0"	11/28/07	0	0.5	Area 1	UG/KG	733000

Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
S207	S207-0"	11/28/07	0	0.5	Area 1	UG/KG	479500
S208	S208-0"	11/26/07	0	0.5	Area 1	UG/KG	4845000
S209	S209-0"	11/26/07	0	0.5	Area 1	UG/KG	3520000
S210	S210-0"	11/26/07	0	0.5	Area 1	UG/KG	7460000
S211	S211-0"	11/26/07	0	0.5	Area 1	UG/KG	3670000
S212	S212-0"	11/26/07	0	0.5	Area 1	UG/KG	1159000
S213	S213-0"	11/28/07	0	0.5	Area 1	UG/KG	12540000
S214	S214-0"	11/28/07	0	0.5	Area 1	UG/KG	738000
S215	S215-0"	11/28/07	0	0.5	Area 1	UG/KG	130300
S216	S216-0"	11/28/07	0	0.5	Area 1	UG/KG	66200
S217	S217-0"	11/28/07	0	0.5	Area 1	UG/KG	534000
S218	S218-0"	11/28/07	0	0.5	Area 1	UG/KG	117200
S219	S219-0"	11/28/07	0	0.5	Area 1	UG/KG	535000
S220	S220-0"	11/28/07	0	0.5	Area 1	UG/KG	597000
S221	S221-0"	11/28/07	0	0.5	Area 1	UG/KG	489600
S222	S222-0"	11/28/07	0	0.5	Area 1	UG/KG	54100
S223	S223-0"	11/28/07	0	0.5	Area 1	UG/KG	1797000
S224	S224-0"	11/28/07	0	0.5	Area 1	UG/KG	11230000
S225	S225-0"	11/28/07	0	0.5	Area 1	UG/KG	2135000
S226	S226-0"	11/28/07	0	0.5	Area 1	UG/KG	996000
S227	S227-0"	11/29/07	0	0.5	Area 1	UG/KG	497000
S228	S228-0"	11/28/07	0	0.5	Area 1	UG/KG	13880000
S229	S229-0"	11/28/07	0	0.5	Area 1	UG/KG	1040000
S230	S230-0"	11/28/07	0	0.5	Area 1	UG/KG	2700
S230	S230-12"	11/28/07	1	1.5	Area 1	UG/KG	22800
S231	S231-0"	11/28/07	0	0.5	Area 1	UG/KG	532900
S232	S232-0"	11/28/07	0	0.5	Area 1	UG/KG	423600
S233	S233-0"	11/28/07	0	0.5	Area 1	UG/KG	3260000
S234	S234-0"	11/28/07	0	0.5	Area 1	UG/KG	77900
S235	S235-0"	11/28/07	0	0.5	Area 1	UG/KG	171300
S236	S236-0"	11/28/07	0	0.5	Area 1	UG/KG	527000
S237	S237-0"	11/29/07	0	0.5	Area 1	UG/KG	661000
S238	S238-0"	1/28/08	0	0.5	Area 2	UG/KG	139400
S239	S239-0"	1/28/08	0	0.5	Area 2	UG/KG	45000
S239	S239-12"	1/30/08	1	1.5	Area 2	UG/KG	69600
S240	S240-6"	1/20/09	0.5	1	Area 2	UG/KG	1847500
S241	S241-6"	1/20/09	0.5	1	Area 2	UG/KG	1180700
S242	S242-0"	1/29/08	0	0.5	Area 2	UG/KG	371400
S244	S244-0"	1/28/08	0	0.5	Area 2	UG/KG	320500
S245	S245-0"	1/28/08	0	0.5	Area 2	UG/KG	10400
S246	S246-0"	1/29/08	0	0.5	Area 2	UG/KG	289200
S247	S247-0"	1/29/08	0	0.5	Area 2	UG/KG	352200
S248	S248-0"	1/28/08	0	0.5	Area 2	UG/KG	552000
S249	S249-0"	1/28/08	0	0.5	Area 2	UG/KG	377000
S250	S250-12"	1/30/08	1	1.5	Area 2	UG/KG	117600
S251	S251-0"	1/28/08	0	0.5	Area 2	UG/KG	268800
S251	S251-6"	1/20/09	0.5	1	Area 2	UG/KG	355700
S252	S252-0"	1/29/08	0	0.5	Area 2	UG/KG	198900
S253	S253-0"	1/29/08	0	0.5	Area 2	UG/KG	219600
S254	S254-0"	1/29/08	0	0.5	Area 2	UG/KG	483000
S254	S254-12"	1/30/08	1	1.5	Area 2	UG/KG	279400
S256	S256-0"	1/31/08	0	0.5	Area 2	UG/KG	2170000
S257	S257-0"	1/3/08	0	0.5	Area 2	UG/KG	57100
S258	S258-0"	1/3/08	0	0.5	Area 2	UG/KG	549000
S259	S259-0"	1/31/08	0	0.5	Area 2	UG/KG	1217000
S260	S260-0"	1/3/08	0	0.5	Area 2	UG/KG	19800
S261	S261-0"	12/21/07	0	0.5	Area 3	UG/KG	5160000
S262	S262-0"	12/13/07	0	0.5	Area 3	UG/KG	3745000
S263	S263-0"	2/1/08	0	0.5	Area 3	UG/KG	32300
S264	S264-0"	1/3/08	0	0.5	Area 3	UG/KG	702000
S264	S264-12"	1/3/08	1	1.5	Area 3	UG/KG	11300000
S265	S265-6"	1/20/09	0.5	1	Area 3	UG/KG	2775000
S266	S266-0"	12/14/07	0	0.5	Area 3	UG/KG	64800
S267	S267-0"	1/4/08	0	0.5	Area 3	UG/KG	1170000
S268	S268-0"	1/2/08	0	0.5	Area 3	UG/KG	1213000
S268	S268-12"	1/2/08	1	1.5	Area 3	UG/KG	1358000
S269	S269-0"	12/4/07	0	0.5	Area 3	UG/KG	2058000

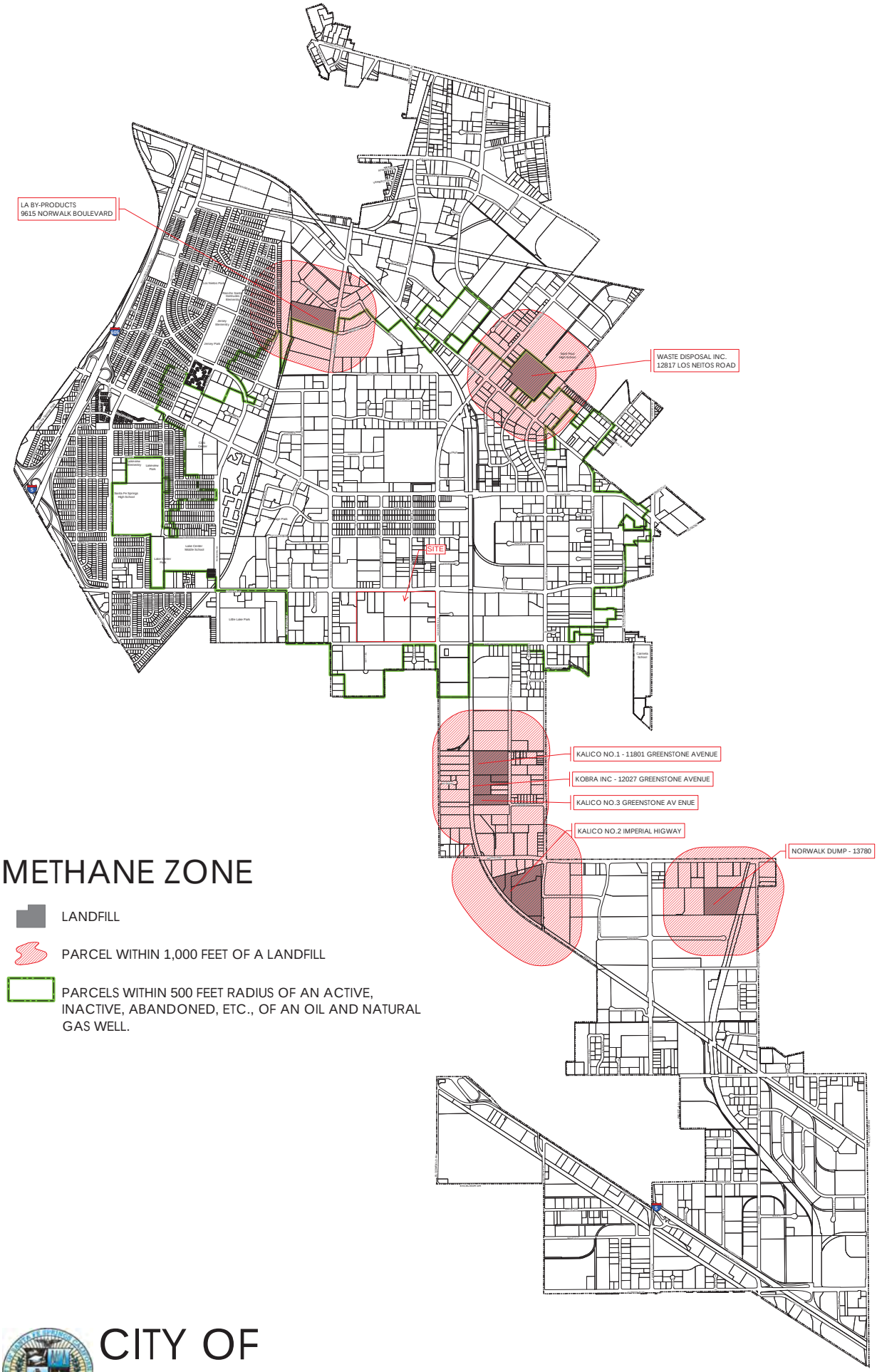
Table A8
Results of TPHmo Analysis in Shallow Soil
Former Powerine Refinery
Santa Fe Springs, CA

Location	Sample	Date Collected	Depth Start	Depth End	Site Risk Area	Units	Motor Oil Range Organics
S270	S270-0"	12/17/07	0	0.5	Area 4	UG/KG	630000
S271	S271-0"	1/4/08	0	0.5	Area 1	UG/KG	292000
S272	S272-0"	11/28/07	0	0.5	Area 1	UG/KG	54700
S273	S273-0"	11/28/07	0	0.5	Area 1	UG/KG	827000
S274	S274-0"	11/29/07	0	0.5	Area 1	UG/KG	436000
S274	S274-12"	11/29/07	1	1.5	Area 1	UG/KG	6630
S275	S275-0"	11/29/07	0	0.5	Area 3	UG/KG	2878500
S275	S275-12"	11/29/07	1	1.5	Area 3	UG/KG	3807600
S276	S276-0"	11/29/07	0	0.5	Area 1	UG/KG	722000
S277	S277-0"	1/31/08	0	0.5	Area 2	UG/KG	516000
S278	S278-0"	1/31/08	0	0.5	Area 2	UG/KG	1047000
S279	S279-0"	12/20/07	0	0.5	Area 2	UG/KG	165100
S280	S280-0"	1/3/08	0	0.5	Area 2	UG/KG	322000
S281	S281-0"	2/1/08	0	0.5	Area 2	UG/KG	680000
S282	S282-6"	1/20/09	0.5	1	Area 2	UG/KG	1432600
S282	S282-12"	1/20/09	1	1.5	Area 2	UG/KG	1520000
S283	S283-0"	1/29/08	0	0.5	Area 2	UG/KG	5150000
S284	S284-0"	1/29/08	0	0.5	Area 2	UG/KG	79600
S284	S284-12"	1/30/08	1	1.5	Area 2	UG/KG	671000
S285	S285-0"	11/28/07	0	0.5	Area 1	UG/KG	1326000
S286	S286-0"	11/26/07	0	0.5	Area 1	UG/KG	891000
S287	S287-0"	11/26/07	0	0.5	Area 1	UG/KG	6450000
S287	S287-12"	11/26/07	1	1.5	Area 1	UG/KG	2620000
S288	S288-0"	11/26/07	0	0.5	Area 1	UG/KG	742000
S289	S289-0"	11/26/07	0	0.5	Area 1	UG/KG	872000
S290	S290-0"	11/26/07	0	0.5	Area 1	UG/KG	396000
S291	S291-0"	1/7/08	0	0.5	Area 4	UG/KG	894000
S292	S292-6''	1/19/09	0.5	1	Area 1	UG/KG	248600
S293	S293-0"	11/26/07	0	0.5	Area 1	UG/KG	20900000
S294	S294-0"	11/26/07	0	0.5	Area 1	UG/KG	6910000
S295	S295-6"	11/26/07	0.5	1	Area 1	UG/KG	11140000
S296	S296-0"	11/28/07	0	0.5	Area 1	UG/KG	995000
S296	S296-18"	11/28/07	1.5	2	Area 1	UG/KG	781000
S297	S297-6"	1/20/09	0.5	1	Area 3	UG/KG	756600
S297	S297-12"	1/20/09	1	1.5	Area 3	UG/KG	4522000
S298	S298-0	12/4/07	0	0.5	Area 4	UG/KG	17500000
VE1	LL_VE1_10_052611_01	5/26/11	9.5	10	Area 3	UG/KG	<10000

Notes
UG/KG micrograms per kilogram

APPENDIX B

CITY OF SANTA FE SPRINGS METHANE REGULATIONS



METHANE ZONE

LANDFILL

PARCEL WITHIN 1,000 FEET OF A LANDFILL

PARCELS WITHIN 500 FEET RADIUS OF AN ACTIVE, INACTIVE, ABANDONED, ETC., OF AN OIL AND NATURAL GAS WELL.

CITY OF SANTA FE SPRINGS

N

0 2,000 4,000 Feet

OILFIELD SITE PLAN REVIEW
POLICIES AND PROCEDURES

The following policies and procedures are intended as guidelines to assist the City of Santa Fe Springs effectively review site plan applications involving new development projects over, around, and nearby active and inactive oil wells on a site.

Formerly, a comprehensive Site Plan Review was performed by California Division of Oil and Gas and Geothermal Resources (DOGGR) on an applicantõs (developerõs) behalf. In 2010, notice was provided by DOGGR that these Site Plan Reviews will no longer be provided and that the local permitting agency (City or County) shall assume this responsibility. DOGGR will continue the responsibility of permitting and approving the abandonment or re-working of all oil wells.

Documents that shall be included for Site Plan Review By the City of Santa Fe Springs (City)

1. **Site Plan Review Application** --- Site plan review application form provided by the City and attached hereto as Exhibit A. All site plan review requests must be submitted on this form.

2. **OG 159 Certificate** --- This document is prepared and issued by DOGGR showing oil wells were properly abandoned to current DOGGR standards. Note: Current abandonments range from approximately the mid-1980õs to 2010. As of 2011, DOGGR is beginning to require a õzonal isolationò plug in the abandonment of oil wells --- which essentially amounts to a 4th concrete plug being placed during the abandonment process (versus the previous 3 concrete plugs).

3. **Site Plan Layout** --- A to-scale, engineered exhibit shall accompany the site plan review application which shall show proposed development in relation to all on-site oil wells. The oil well locations shall be printed in table format on the Site Plan layout and include GPS coordinates and DOGGR well name and number as well as API Number. The Site Plan layout shall be signed and stamped by a Registered Civil Engineer.

4. **Evidence of Vent Cone Installation** --- When applicable evidence shall be included with the Site Plan review application documenting that a vent cone was installed over an abandoned oil well. All vent cone installations shall be witnessed and approved by SFS Fire Department with a form

which includes the name of the oil well, API number, and date of vent cone installation. SFS Fire shall sign-off only after a vent cone is installed and before any backfilling of dirt/soil is allowed.

Note: It may also be allowed that Vent Cone installation be completed after site plan review. If so, the vent cone installation and evidence must be completed prior to the issuance of building permits by the City of Santa Fe Springs.

<u>Procedures for Site Plan Review</u>

1. It shall be the responsibility of the applicant to verify through DOGGR the status and location of all oil wells on site. All oil wells on site will be uncovered and inspected by a registered petroleum engineer or other qualified individual. All exposed wells will be tested and the precise GPS location of the wells will be recorded. The engineer will prepare a report describing the condition of the wells and recommend any remedial action needed in order to bring the well(s) into compliance with DOGGR standards.

2. Any oil well **WITHIN** 10-feet of a proposed structure must be abandoned to current DOGGR standards.
    - A vent cone will be required in addition to a methane test within 1 year prior to issuance of a building permit.

    - The applicant has the following options:
        i. Adjust site plan to conform to printed DOGGR minimum standards for setbacks: The ñ10/10/50/Openò Rule. See attached layout and description as Exhibit B. Note: At the discretion of the City of Santa Fe Springs, a vent cone and methane test may be required before building permit issuance where sensitive land uses are concerned, e.g. residences, hospitals, restaurants.
        ii. Re-Abandon the oil well to current standards. This would allow applicant to not only build within 10-feet of well, but also over a well. Note: vent cone and methane test will be required.

3. If an oil well is **OUTSIDE** of 10-feet from a proposed structure the report prepared by the petroleum engineer will be used to determine any remedial action that needs to be taken. At a minimum, the wells must be exposed and a methane test conducted to determine whether or not the wells are leaking.

4 If a site plan review (or a portion of the site plan review) has been disapproved by the City, the applicant has the following options:
    - Re-abandon the oil well(s) in accordance with DOGGR standards and obtain OG159 certificate(s) for the well(s); or,
    - Adjust the site plan to the satisfaction of City as Site Plan reviewer to provide safe-distance from proposed buildings.

5. All proposed buildings must be setback from active oil wells in accordance with applicable building and fire codes.

City Approval of Site Plan Review Application General Conditions

The developer/applicant will be responsible to provide evidence to the Department of Planning and Development and the Fire Department that all mitigation measures determined by the Site Plan Review have been complied with (e.g. vent cones and methane tests) prior to issuance of a building permit and that the site plan as approved in the Site Plan Review Approval is consistent with the permit request.
Note: any discrepancies will not be the Cityôs responsibility. If Site Plan Review is included as part of building plans and permitting process, it will be the applicant/developers responsibility to ensure that the final site plan takes into account any changes/alterations/modifications made during the Site Plan Review process.

Building Permit Issuance Checklist

The normal building permit issuance checklist items will apply: grading certification, compaction certification from soils engineer, planning department authorization for compliance with site plan and building elevations.

The following will also be required:

1. City Site Plan Review Approval as outlined above. The form is completed and signed and the site plan approval matches the area on the site for which a building permit is being issued.
2. Evidence of Vent Cone Installation ï it is possible that this evidence is not completed during site plan review. It is the responsibility of the developer/applicant to provide the Department of Planning and Development with evidence (on a per-oil well basis) that SFS Fire Department has witnessed the installation of the vent cone and is properly vented to the surface.
3. Evidence of a methane test to ensure that the oil well is not leaking. This test must be performed by a register petroleum engineer or qualified independent 3rd Party. It must be performed within 1-year prior to the date of building permit issuance and written evidence shall be provided from 3rd

party to verify that the on-site oil well is not leaking. The evidence shall include date of test, oil well name and number, oil well API number, plus name, qualifications, and signature of the party that performed the test.

Before Building Final (Job Card) Completion for Residential Projects

In addition to completing the required construction practices per the Building Inspector, the job card should not be completed until developer/applicant has provided Planning, Building and Fire Departments with the acceptable copies of the following:

1. Evidence of Oil Well Disclosure and Locations recorded. The applicant shall submit to the City (and then record with the County Recorders) a site location map showing oil wells within a 50-foot radius for each residential homeowners property prior to building final (job card completion). This map shall include the property being acquired (or job card final) with oil well locations within a 50-ft radius so that it is clear to potential buyers and to future buyers where any former oil wells are in relation to that individualôs property. (Attached is an example as Exhibit C).

ORDINANCE NO. 955

AN ORDINANCE OF THE CITY OF SANTA FE SPRINGS AMENDING SECTION 117.131 OF THE CITY CODE RELATING TO SOIL GASES

THE CITY COUNCIL OF THE CITY OF SANTA FE SPRINGS DOES HEREBY ORDAIN AS FOLLOWS:

Section 1. Section 117.131 of the City Code is hereby amended tc read as follows:

(A) A soils gas investigation shall be required as part of the granting of a subdivision map, conditional use permit, development plan approval, or building permit for construction of a new building, when the property in question falls within the methane zone of the city.

(B) A soil gas investigation shall be required when the level of total petroleum hydrocarbon contamination in the soil exceeds 20,000 parts per million.

(C) A soils gas investigation shall also be required for all existing structures within the methane zone when there is a change of ownership of the property, or when new construction takes place which is equal to or greater than 25% of the assessed value of the building.

(D) The methane zone is that area depicted on the attached map found in division (M) of this section. The methane zone encompasses land in the city which is within 1,000 feet of a landfill or within 250 feet of an existing or abandoned oil well.

(E) On all properties where a soils gas investigation is required the following minimum mitigation measures shall be implemented:

(1) New construction.

(a) Prior to construction, install a minimum of two soil gas monitoring wells. Depending on the size of the lot, the Fire Chief may require the installation of additional wells;

(b) Perform initial monitaring of the subsoil to determine levels of soil gases. Far initial monitoring, each of the wells shall be sampled at least two times within a period of seven days.

(c) If the initial monitoring reveals methane levels of less than 25% of the Lower Explosive Limit (i.e., 1.25% by volume in air or 12,500ppm/v), a cross ventilation system shall be installed in the new building. VENTILATION is defined as vents in the roof area and near the floor. There shall be four roof vents and four wall vents for the first 10,000 square feet of building space and one roof vent and one wall vent for each additional 10,000 square feet or fraction thereof. As an option, the building owner may install a passive venting system that provides a rate of four air changes per hour or a methane barrier. All office space shall be mechanically or naturally ventilated per the requirements of the city's Building Code. Permanently installed monitoring wells shall be monitored quarterly for one year.

(d) If the quarterly monitoring reveals methane levels of less than 25% of the Lower Explosive Limit (i.e., 1.25% by volume in air or 12,500ppm/v) during the first year, the system shall be monitored annually thereafter. In cases where methane levels are less than 2.5% of the Lower Explosive Limit (i.e. .125% by volume in air or 1250ppm/v) the Fire Chief may waive by request the annual monitoring requirement.

(e) If the initial monitoring reveals methane in excess of 25% of the Lower Explosive Limit (i.e., 1.25% by volume in air or 12,500ppm/v), or if these levels are detected while the building is under construction or after it has been completed, a protective mitigation system shall be installed. The proposed system shall be recommended and presented by a registered engineer to the Fire Department for approval. Protection may take the form of an active venting system, or a mechanical air exchange system that provides a rate of four air exchanges per hour. If feasible, a methane barrier may be installed. Other alternatives, at the discretion of the registered engineer, may also be submitted for approval. Permanently installed monitoring wells shall be monitored quarterly for one year;

(f) In extraordinary cases, e.g., where methane in excess of 25% of the Lower Explosive Limit (i.e., 1.25% by volume in air, or 12,500ppm/v) can be demonstrated to be a non-repetitive incident, a registered engineer may request a waiver by the Fire Chief for the installation of a protective mitigation system. The granting of the waiver shall be at the discretion of the Fire Chief.

(2) Existing structures.

(a) Install a minimum of two soil gas monitoring wells. Depending on the size of the lot, the Fire Chief may require the installation of additional wells;

(b) Perform initial monitoring of the subsoil to determine levels of soil gases. For initial monitoring each of the wells shall be sampled at least two times within a period of seven days;

(c) If the initial monitoring reveals methane levels of less than 25% of the Lower Explosive Limit (i.e., 1.25% by volume in air or 12,500ppm/v), manitor for methane quarterly for one year;

(d) If the quorterly monitoring reveals methane levels of less than 25% of the Lower Explasive Limit (i.e., 1.25% by volume in air or 12,500ppm/v) during the first year, the system shall be monitored annually thereafter. In cases where methane levels are less than 2.5% of the Lower Explosive Limit (i.e. .125% by volume in air or 1250ppm/v) the Fire Chief may waive by request the annual monitoring requirement;

(e) If the initial or subsequent monitoring reveals methane in excess of 25% of the Lower Explosive Limit (i.e., 1.25% by valume in air or 12,500ppm/v), a protective mitigation system shall be installed. The proposed system shall be recommended and presented by a registered engineer to the Fire Department for approval. Protection may take the form of an active venting system that provides a rate of four air exchanges per hour, a gas detection system, or a cross ventilation system with vents in the roof area and near the flaor. For cross ventilatian there shall be four roof vents and four wall vents for the first 10,000 square feet of building space and one roof vent and one wall vent for each additional 10,000 square feet or fraction thereof. Permanently installed monitoring wells shall be monitored quarterly for one year;

(F) Based on the results of the soils gas investigation or on information available on surrounding properties, property owners shall take such other mitigation measures as required by the Fire Chief.

(G) Where gas detection systems are used, they shall be designed by and installed under the supervision of registered engineers. The design and installation shall be inspected and approved by the Fire Deportment. Following installation, a readily visible sign shall be posted which reads:

"Gas Detection Alarm. In the event of an alarm, evacuate the building and call the Fire Department, 911. Do not disconnect under penalty of law."

(H) The property owner shall provide access for the Fire Department to the alarm panel and the building in which it is installed as well as the olarm reset code by means of an approved key box system. Keys shall be clearly and permanently identified.

(I) The building owner shall be responsible for assuring that annual inspections of the permanent monitoring wells and gas mitigation systems are completed. Reports of these inspections shall be conducted and submitted by a registered engineer. A fine shall be charged, as established by resolution of the City Council, for each gas mitigation system found to be inoperative or where the required identifying sign has been removed.

(J) Where new development takes place in the methone zone and which incorporotes sensitive land uses (e.g., places of public assembly, hospitals, restaurants, schools, and the like), a methane barrier or other venting system may be required regardless of the methane levels detected. Invoking this requirement is at the discretion of the Fire Chief.

(K) Residential properties located within the methane zone are exempt from the provisions of this section, except in coses where the public health and welfare are threatened, methane protection may be required. Invoking this requirement is at the discretion of the Fire Chief.

(L) For properties where soil gas investigations are required, the property owner shall submit a soil gas work plan to the Fire Department for review, approval and permitting prior to commencing any work, and prior to issuance of building permits. The design of systems for property within 1,000 feet of a landfill shall be in accordance with the requirements of the County Department of Public Works and City Fire Department. All other systems shall be designed in accordance with the requirements for the Fire Department. A fee shall be charged, as set forth in the Building Code or by resalution of the City Council, for the service provided in this section.

(M) All methane monitoring reports required by this section shall be sent to the Fire Chief with copies to the Department of Planning and Development.

(N) The city methane gas map is adopted by reference as if set forth in full in this section. A copy of the city methane gas map is available for public inspection at city offices during regular business hours.

Section 2. The City Clerk shall certify to the adoption of this Ordinance, and shall cause the same to be posted in at least three (3) public places in the City, such posting to be completed not later than fifteen (15) days after passage hereof.

PASSED AND ADOPTED THIS 8th day of April, 2004.

AYES: Councilmembers Gonzalez, Kernes, Putnam, Serrano, Mayor Velasco

NOES: None

ABSENT: None

Gustavo R. Velasco
MAYOR

ATTEST:

Marilyn Jaxson
CITY CLERK

APPENDIX C

MUREX REFINERY-WIDE REMEDIAL ACTION OBJECTIVES AND ALTERNATIVES EVALUATION

C1 MUREX REFINERY-WIDE REMEDIAL ACTION OBJECTIVES AND ALTERNATIVES EVALUATION

The following is derived from Murex's refinery-wide remedial alternatives evaluation presented in Murex 2013.

As a part of the design of the proposed pilot test, Murex conducted a preliminary focused feasibility analysis to identify best-fit remediation technologies for the Site. The following subsections describe the remedial technologies subjected to a weighted screening in which the Remedial Action Objectives (RAOs; outlined below) were used to define the selection criteria.

C1.1 Remedial Action Objectives

A screening process was designed to evaluate the Remedial Action Alternatives (RAAs) in their ability to meet the Site cleanup goals using a modified version of the Environmental Protection Agency's (USEPA) Office of Solid Waste and Emergency Response (OSWER) directive, titled "Guidance on Conducting Non-Time-Critical Removal Actions Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)". Although not required to use this approach, the EPA's guide provides a useful set of guidelines for evaluating remedial alternatives. The overall goals of the exercise are to ensure that the remedy selected is protective of human health and the environment, that it accomplishes the goals set forth by the stakeholders, and that it will be feasible to accomplish. The nine overall criteria used in this analysis are outlined in **Appendix D**.

These criteria were combined and adapted around concerns specific to the Site and its expected future use as follows:

1. Select a remedial technology for the top 10 ft of soil that can be managed cost effectively and can meet human health-based cleanup goals, allowing for redevelopment to commence; and

2. Select a remedial technology or technologies for the vadose zone and groundwater that can be cost-effectively implemented over a longer time frame that will eliminate or reduce potential further impact to groundwater in accordance with RWQCB requirements.

C1.2 Initial Screening of Remedial Technologies

Table C1 outlines the technologies considered in the initial screening, divided into applicable zones of shallow soil, deep soil and groundwater. These technologies are:

Shallow Soil Zone:

- Excavation with Off-Site Disposal
- Excavation with On-Site Treatment
- Soil Cap
- No Action

Deep Soil Zone:

- Soil Vapor Extraction
- Bioventing
- Deep Soil Excavation
- Thermal Treatment
- No Action

Groundwater:

- Pump and Treat
- Air Sparging
- Chemical Oxidation
- In-Situ Biological Treatment (Biosparging)
- Monitored Natural Attenuation
- No Action

A description of each of these technologies can be found in **Appendix D**. Each technology was given a score in each of the nine criteria outlined in **Appendix D** based on its ability to meet said criteria. Ratings scaled from 1 to 10, with 1 being poor and 10 being excellent. The sum of all a technology's ratings in each of the nine criteria categories equals the composite score, which is listed in the far right column. The technologies which scored in the 50th percentile or above are colored in green, indicating that these are the technologies most capable of meeting the remedial action criteria and are worthy of being further evaluated.

C1.3 Selection of Remedial Alternative

The results of the initial screening (summarized in **Table C1**) indicate that seven total technologies meet the criteria for best-fit technologies at the Site. These are:

Shallow Soil Zone:	Excavation with Off-Site Disposal
	Excavation with On-Site Treatment
Deep Soil Zone:	Soil Vapor Extraction
	Bioventing
Groundwater:	Air Sparging
	Chemical Oxidation
	In-Situ Biological Treatment (Biosparging)

These technologies were considered and paired into three separate remedial alternatives, choosing one technology for each zone. While many combinations may be possible, pairings for the three alternatives were chosen based on experience and best practice. A description of the three alternatives is below:

	Alternative #1	**Alternative #2**	**Alternative #3**
Shallow Soil	Excavation; Off-Site Disposal	Excavation; On-Site Treatment	Excavation; Off-Site Disposal
Deep Soil Zone	Bioventing	Soil Vapor Extraction	Soil Vapor Extraction
Groundwater	Biosparging	Air Sparging	Chemical Oxidation

Table C2 details the focused feasibility screening process through which the three alternatives were compared. The ratings assigned to each technology were combined to create three composite scores for each alternative.

Alternative 2, with a composite score of 205, is cost prohibitive as an on-site treatment facility for the excavated shallow soil would require greater capital costs and nearly double the yearly operation and maintenance (O&M) costs of Alternatives 1 and 3. Additionally, this alternative would require the management of high quantities of methane recovered from deep soil.

Alternative 3, with a composite score of 216, is also cost prohibitive due to the need for chemical oxidants for groundwater remediation over a wide areal extent. Capital costs range $1-2 million higher than the two other alternatives. This alternative would also require a WDR permit, greater monitoring requirements, and would take longer to implement given the use of chemical injection. This alternative could also require additional studies to expand characterization of the hydrogeology to better understand the effects and flow of the chemical oxidants once injected.

Alternative 1, selected by Murex and the proposed alternative, ranked the highest with a score of 226. This option is the most flexible (both schedule-related flexibility and flexible to different development scenarios), exhibits the lowest annual O&M projected costs, and would be the easiest to implement. It combines three proven technologies which have a high certainty of meeting cleanup goals and satisfying the RAOs within the estimated time frame of 3 to 5 years.

Figures C-1 through C-4 provide conceptual illustrations of a deep soil and groundwater remediation system layout, and well construction.

Table C1
Initial Technology Screening Evaluation
Former Powerine Refinery
Santa Fe Springs, CA

Alternatives	Remedy Selection Criteria for Cleanup Actions Under Regulatory Oversight									Evaluation Results	
	Corrective Action Standards				Remedy Selection Decision Factors						
	Be Protective of Human Health and the Environment	Attain Media Cleanup Standards	Control the Source (s) of Releases [1]	Comply With Applicable Waste Management Regulations [2]	Short and Long-Term Effectiveness	Reduction of Toxicity, Mobility, and/or Volume	Long-Term Reliability	Implementability	Cost	Composite Score	Consider for Further Evaluation?
SHALLOW SOIL (0-10 ft-bgs)											
Excavation with Off-Site Disposal	8	10	10	10	10	3	10	5	4	70	Yes
Excavation with On-Site Treatment	8	8	9	8	8	7	9	3	3	63	Yes
Cap	3	1	2	10	4	1	3	7	6	37	No
No Action	1	1	1	10	1	1	1	10	10	36	No
DEEP SOIL (10-100 ft-bgs)											
Soil Vapor Extraction	9	8	10	10	8	9	9	7	5	75	Yes
Bioventing	9	8	10	10	9	9	9	8	8	80	Yes
Excavation	7	10	10	10	10	3	10	1	1	62	No
Thermal Treatment	8	10	10	10	10	10	10	3	2	73	No
No Action	1	1	1	10	1	1	1	10	10	36	No
ONSITE GROUNDWATER											
Pump and Treat	5	4	2	6	4	6	4	3	3	37	No
Air Sparging	6	8	8	10	8	9	8	5	5	67	Yes
Chemial Oxidation	6	6	5	6	6	6	8	6	4	53	Yes
In-Situ Biological Treatment (Biosparging)	8	8	8	10	8	9	9	8	8	76	Yes
Monitor Natural Attenuation	3	3	1	10	2	4	3	10	10	46	No
No Action	1	1	1	10	1	1	1	10	10	36	No

SCALE: 1 = POOR 10 = EXCELLENT

Notes

[1]Control the sources of releases in order to reduce or eliminate, to the extent practicable, further releases of hazardous wastes that may pose a threat to human health and the environme

[2]Comply with any applicable federal, state, and local standards for management of wastes

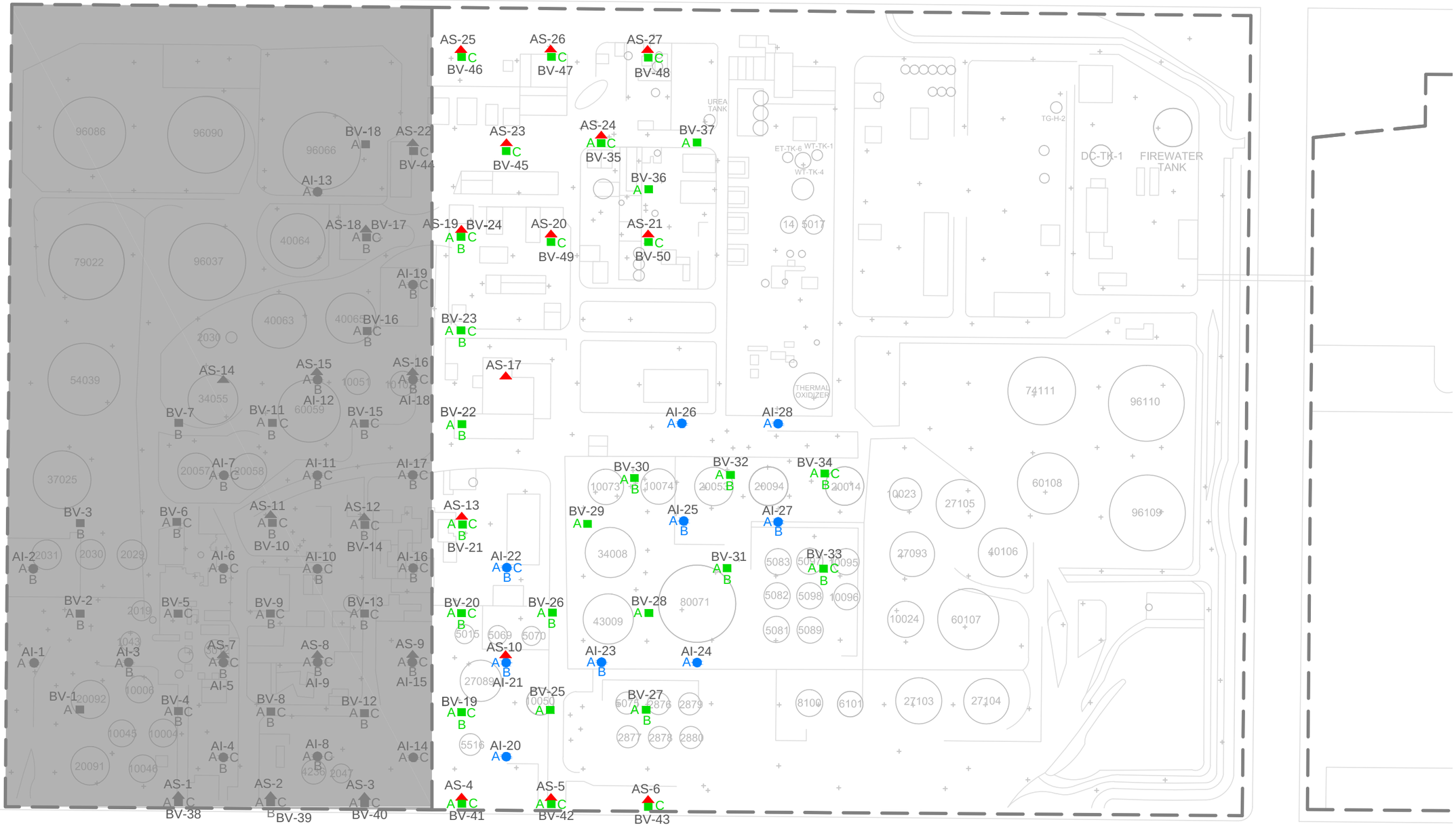
Table C2
Selection of Remedial Alternative
Former Powerine Refinery
Santa Fe Springs, CA

	Remedial Alternatives for Consideration		
	Alternative 1	**Alternative 2**	**Alternative 3**
Technologies used in Each Alternative	**Shallow Soil: Excavation, Off-Site Disposal**	**Shallow Soil: Excavation, On-Site Treatment**	**Shallow Soil: Excavation, Off-Site Disposal**
	Deep Soil: Bioventing	**Deep Soil: Soil Vapor Extraction**	**Deep Soil: Soil Vapor Extraction**
	Onsite Groundwater: Biosparging	**Onsite Groundwater: Air Sparging**	**Onsite Groundwater: Chemical Oxidation**
Alternative Description	Removal of shallow soil contamination by excavation; soil will be moved to an appropriate off-site disposal facilty. Deep soil and groundwater will be treated by the introduction of oxygen, allowing microorganisms to remediate the contamination naturally. Lower flow air extraction and off-gas treatment are necessary.	Removal of shallow soil contaminants by excavation; soil will be treated on-site. Air sparging volatilizes contamiants which are caught by Soil Vapor Extraction Wells in both the deep soil and groundwater zones.	Removal of shallow soil contamination by excavation; soil will be moved to an appropriate off-site disposal facility. Air sparging volatilizes contaminants which are caught by SVE in the deep soil zone. Groundwater is treated by introduction of high concentration oxygen via synthetic chemicals.
Advantages	- Proven technology, regulatory acceptance - Cost-effective approach -Flexible to Implement -Lower O&M Costs	- Proven technology, regulatory acceptance -Flexible to Implement	- Proven technology, regulatory acceptance
Disadvantages	- Level of Shallow Soil Cleanup determined by accuracy of characterization -Requires electrical usage -Regular O&M, recurring costs	-Level of Shallow Soil Cleanup Determined by accuracy of characterization -Requires electrical usage -Regular O&M, recurring costs -Higher Costs associated with On-Site Shallow Soil Treatment '-Can worsen vapor intrusion concerns '-Requires management of high quantities of methane	- Level of cleanup determined by accuracy of characterization -Requires electrical usage -Regular O&M, recurring costs -Requires more in-depth understanding of hydrogeology -Higher Capital Costs for Injection Chemicals -Requires managing high quantities of methane -Requires WDR Permit

Criteria	Score Comparison & Alternative Selection		
	Alternative 1	**Alternative 2**	**Alternative 3**
Protective of Human Health & Environment	**25**	**23**	**25**
Attain Media Cleanup Standards	**26**	**24**	**26**
Control the Sources of Release	**28**	**27**	**27**
Comply with Applicable Waste Mgmt Regulations	**30**	**28**	**28**
Short and Long Term Effectiveness	**27**	**24**	**26**
Reduction of Contaminant Toxicity, Mobility, Volume	**21**	**25**	**20**
Long Term Reliability	**28**	**26**	**29**
Implementibility	**21**	**15**	**20**
Cost	**20**	**13**	**15**
COMPOSITE SCORE:	**226**	**205**	**216**

SCALE: 0 = POOR 30 = EXCELLENT

Notes
It is assumed that all criteria are equally weighted, for the purposes of the feasibility exercise



LEGEND

BV-1
A ■ C
B
PROPOSED BIOVENTING WELL

AI-1
A ● C
B
PROPOSED AIR INJECTION WELL

AS-1
▲
PROPOSED AIR SPARGE WELL

A TREATMENT WELL PROPOSED 5-30 FT
B TREATMENT WELL PROPOSED 30-60 FT
C TREATMENT WELL PROPOSED 60 FT TO GW

WELL	ZONE A 5-30 FT	ZONE B 30-60 FT	ZONE C 60-GW	GW	TOTAL
BV	40	29	34	-	50
AI	28	21	15	-	28
AS	-	-	-	27	27

GRAY SHADED AREA
IS FORMER REFINERY
PROPERTY NOT ADDRESSED
BY THIS RAP

No warranty is made by Stantec as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed electronically, and may be updated without notification. Any reproduction may result in a loss of scale and or information.

REFERENCE:
THIS FIGURED DERIVED FROM MUREX 2013. LOCATIONS ARE APPROXIMATE

Stantec
25864-F BUSINESS CENTER DRIVE
REDLANDS, CALIFORNIA 92374
PHONE: (909) 335-6116 FAX: (909) 556-6516

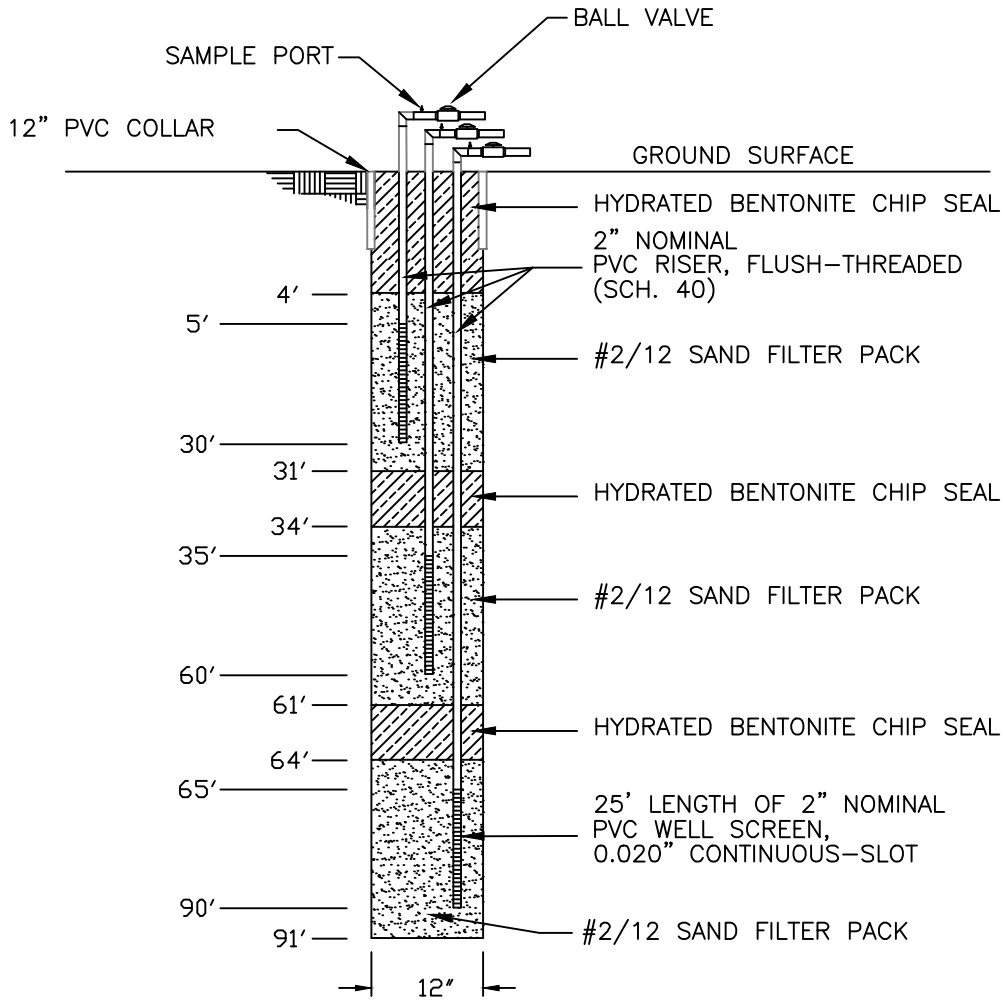
FOR:
FORMER POWERINE REFINERY
PARCELS 8009-022-053, 054, 055, 056, 057 & 058
12345 LAKELAND ROAD
SANTA FE SPRINGS, CALIFORNIA

SITE PLAN SHOWING
PROPOSED BIOVENTING, AIR
INJECTION, AND AIR SPARGE
WELL LOCATIONS

FIGURE: C1

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185803065	JBL	RN	KM	08/13/13

FILEPATH:M:\00_OTHER OFFICES\Redlands\Powerine-Refinery\2013\RAP\Stantec\East\F23-WELL PLACEMENT FIG.dwg|jlieberman|Sep 06, 2013 at 8:35|Layout: 17 X 11



BIOVENTING SVE WELL
CONSTRUCTION DETAIL (TYP.)

N.T.S.

REFERENCE:
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FOR:
FORMER POWERINE REFINERY
PARCELS 8009-022-053, 054, 055, 056, 057 & 058
12345 LAKELAND ROAD
SANTA FE SPRINGS, CALIFORNIA

BIOVENTING SVE WELL
CONSTRUCTION DETAIL

FIGURE: C2

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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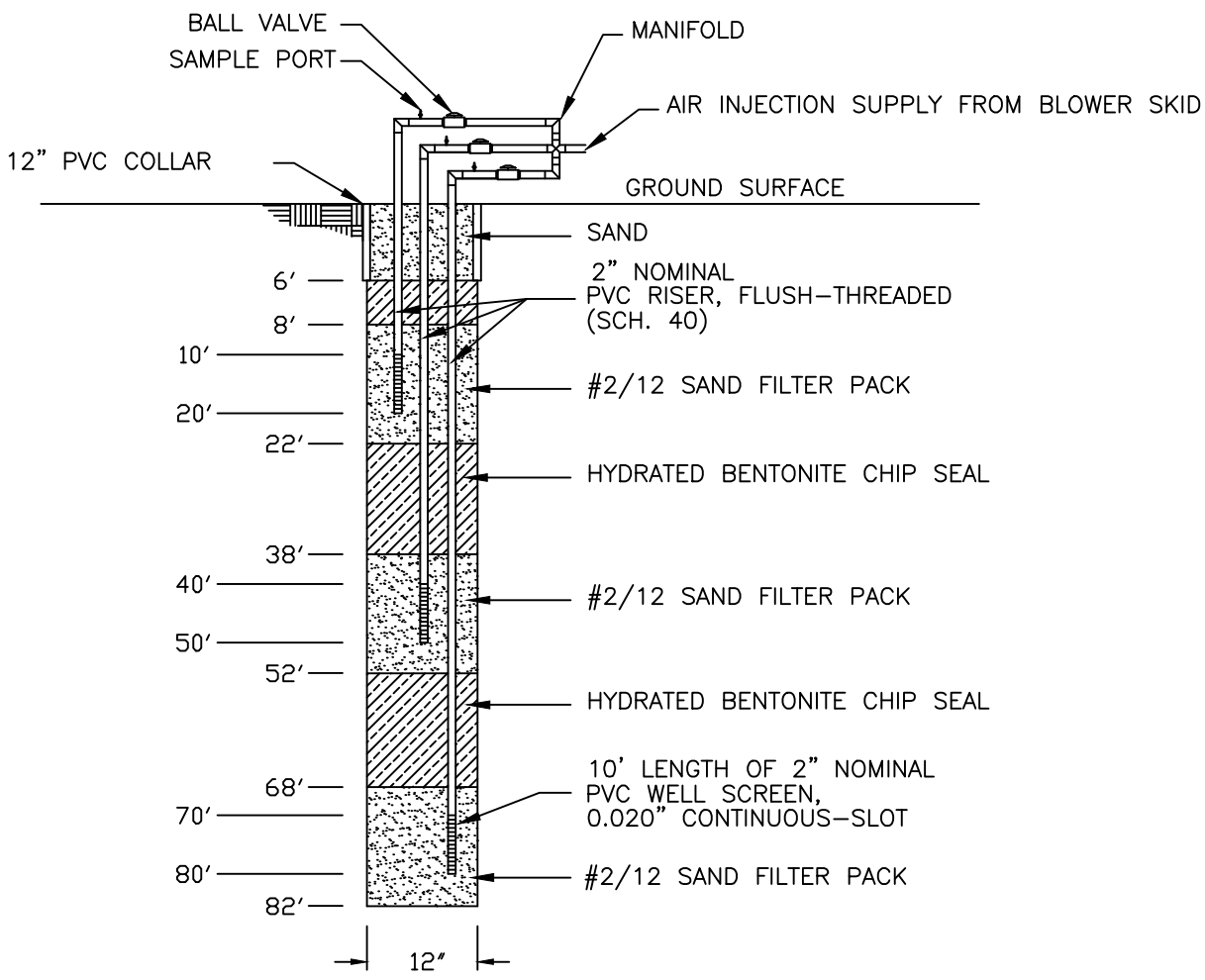

AIR INJECTION WELL
CONSTRUCTION DETAIL (TYP.)

N.T.S.

REFERENCE:
THIS FIGURED DERIVED FROM MUREX 2013.

Stantec
25864-F BUSINESS CENTER DRIVE
REDLANDS, CALIFORNIA 92374
PHONE: (909) 335-6116 FAX: (909) 556-6516

FOR:
FORMER POWERINE REFINERY
PARCELS 8009-022-053, 054, 055, 056, 057 & 058
12345 LAKELAND ROAD
SANTA FE SPRINGS, CALIFORNIA

AIR INJECTION WELL
CONSTRUCTION DETAIL

FIGURE: C3

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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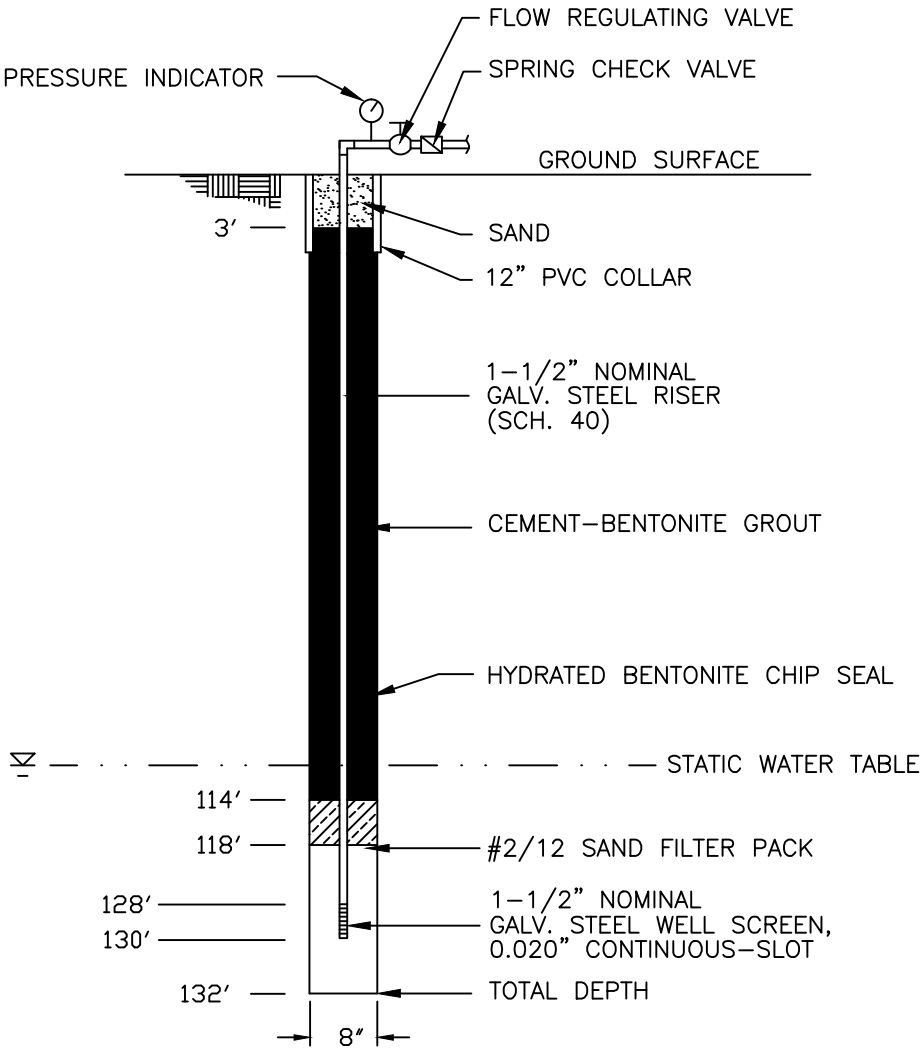


AIR SPARGE WELL CONSTRUCTION DETAIL (TYP.)

N.T.S.

REFERENCE:
THIS FIGURED DERIVED FROM MUREX 2013.

Stantec
25864-F BUSINESS CENTER DRIVE
REDLANDS, CALIFORNIA 92374
PHONE: (909) 335-6116 FAX: (909) 556-6516

FOR:
FORMER POWERINE REFINERY
PARCELS 8009-022-053, 054, 055, 056, 057 & 058
12345 LAKELAND ROAD
SANTA FE SPRINGS, CALIFORNIA

AIR SPARGE WELL
CONSTRUCTION DETAIL

FIGURE: C4

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185803065	JBL	RN	KM	08/13/13

APPENDIX D

MUREX REFINERY-WIDE CRITERIA FOR SELECTION OF REMEDIAL ACTION ALTERNATIVES AND TECHNOLOGY DESCRIPTIONS

Criteria for Selection of Remedial Action Alternatives

1. Protection of human health and the environment, which is characterized by:
   - The ability to effectively reduce, through mitigation of source or exposure route, the theoretical cancer risk to future receptors below 1×10^{-5} for commercial and construction workers, and to below 1×10^{-6} for residential receptors;
   - The ability to effectively reduce, through mitigation of source or exposure route, the calculated hazard index to future receptors below 1.0;
   - The ability to minimize, through mitigation of source or through the control of continued release, the impairment of natural resources; and
   - The ability to minimize the toxilogical or physical risk to workers and the surrounding environment during implementation of the selected RAA technology.

2. Attain media cleanup standards, which is characterized by:
   - The ability to achieve TRCs, as a predicted likelihood, based on "state-of-the-practice" knowledge and publications on RAAs under evaluation; and
   - The ability to which the success of the RAA can be measured via confirmation sampling.

3. Control the sources of release, which is characterized by:
   - The ability to mitigate or contain any remaining and ongoing source of contaminant distribution to the surrounding environment, which includes areas outside of the Site.

4. Comply with applicable waste management regulations, which is characterized by:
   - The ability of the RAA to be implemented such that it complies with all applicable or relevant and appropriate requirements (ARARs); and
   - The ability of the RAA to allow for the management of waste generated as a result of remedy according to the State and Federal codes governing waste management, such as RCRA.

5. Short and long-term effectiveness, which is characterized by:
   - The ability of the RAA technology to meet TRCs in the near-term, defined herein as approximately six months; and
   - The ability of the RAA technology to maintain contaminant concentrations in various media below TRCs for an extended period of time, defined herein as 30 years.

6. Reduction of toxicity, mobility, and volume of contaminants, which is characterized by:
    - The degree to which the RAA technology actually decreases the hazard itself, as opposed to controlling the exposure; and
    - The estimated degree of permanence of the reduction.

7. Long-term reliability, which is characterized by:
    - The confidence in the ability of the RAA to maintain levels of contamination in various media below the TRCs, based on "state-of-the-practice" knowledge and published data, in various media for an extended period of time, defined herein as 30 years.

8. Implementability, which is characterized by:
    - The feasibility or level of ease with which the RAA can be enacted, taking into account the complexity of the technology, the availability of materials and equipment, various Site-related physical constraints, required additional components, energy and utility needs, and the level of effort required to conduct operational, maintenance, and/or monitoring activities.

9. Cost, which is characterized by:
    - Estimated initial capital cost; and
    - Estimated 30-year life cost for operation and maintenance (O&M).

Technology descriptions

1. No Action: This alternative represents the de minimis approach whereby no remedy is advanced and contamination is left to degrade over time via natural mechanisms. Based on levels and types of contamination, this may result in no effect at all on the toxicity, mobility, or volume of contaminated media, or could result in the worsening of certain conditions, such as soil continuing to leach contamination into groundwater over time. This alternative typically carries with it legal implications, due to the lack of action towards administrative cleanup orders, may face public opposition, and could result in fines. Compared to active remedial alternatives, the costs of taking no action are very low.

2. Excavation with off-site disposal: This alternative for shallow soil (0-10 ft) describes the proposed removal action under which shallow soil exceeding designated cleanup goals would be directly removed and transported to an off-site disposal facility. After clearing subsurface obstructions, soil in areas delineated for removal would be would be excavated, stockpiled, and profiled for disposal. Based upon contaminant concentrations, stockpiles would be combined or segregated according to disposal facility requirements. The selection of disposition facilities would be based upon the results of profile samples, however it is anticipated that the soil from this site will be considered non-hazardous and could be sent for thermal treatment or buried as landfill daily cover. Once approved for off-site transport, haul trucks would be loaded, covered, and manifested for delivery to the soil's final destination. This alternative may or may not treat or reduce the contamination, but removes the source of contamination from the site with high certainty. Compared with other types of treatment technologies, the cost of excavation and off-site disposal are relatively high. Excavation is a relatively short duration remedial approach.

3. Excavation with on-site treatment: This alternative for shallow soil (0-10 ft) describes the proposed removal action under which shallow soil exceeding designated cleanup goals would be directly removed, treated on-site to meet pre-determined levels for acceptable re-use, and then used to backfill the excavations. After clearing subsurface obstructions, soil in areas delineated for removal would be would be excavated and stockpiled. If subjected to vapor treatment, the soil would be stockpiled in long shallow rows on top of impervious surface. The rows would be piled around vapor extraction piping and covered with plastic sheeting. The soil would undergo vapor treatment until certain cleanup goals are reached. If subjected to thermal treatment, an on-site soil

furnace would be used to thermally treat the stockpiled soil in batches. Once completed with the treatment, either vapor or thermal, the soil would be tested. Soil passing established benchmarks would be cleared for placement and compaction, backfilling the excavations. This alternative can be costly and time consuming. This approach can be difficult to permit with the SCAQMD and can be time-costly, as idle construction equipment awaits clearance of soil under treatment. This approach does not treat some compounds, such as metals and heavy oils. This approach removes contamination from the site with only moderate certainty, since in theory, some of the soil be replaced may not meet cleanup goals. No future liability associated with the off-site burial of contamination in a landfill would accompany this alternative. Compared with other types of treatment technologies, the cost of excavation and on-site treatment are relatively high. Excavation is a relatively short duration remedial approach.

4. Soil Cap: This alternative for shallow soil (0-10 ft) describes the removal action under which an impermeable (such as asphalt) cover is placed over contaminated soil for the purpose of 1) limiting the potential pathways for future receptors to be exposed to the contaminated soil and 2) limiting the infiltration of precipitation which can mobilize soil contamination and cause leaching to groundwater. A cap of this type is typically protected by an covenant recorded in the property deed, indicating that it is a permanent feature that must be maintained in place. The effectiveness of a soil cap varies, depending upon the characteristics, concentration, and mobility of the contamination, as well as by the degree to which it is kept in good condition. A soil cap can be an effective interim solution if no funds are available to commence soil remediation, or if impacts are minor and the only concern for the regulatory agency is limiting downward migration to groundwater. Compared with other types of alternatives, the costs for a soil cap are relatively low, but it must be maintained, which generates maintenance costs that can add up over time. In most cases, a soil cap can be installed quickly. A typical asphalt repair/replacement schedule is every 5 to 10 years, depending on use.

5. Soil Vapor Extraction: This alternative for deep soil (10-100 ft) describes the removal action by which vertical vapor suction wells are installed within areas requiring treatment and subjected to vacuum in order to pull contaminants from the subsurface. Above ground, vapor treatment devices, such as thermal burners or carbon filters are applied to clean the extracted vapors prior to their discharge to the atmosphere. This technology can only be applied where contaminants are volatile (i.e., easily evaporated). Toxic vapor treatment permits are required by the SCAQMD and can delay projects.

This approach is relatively well researched and an established technology. The capital cost of equipment is typically moderate, however depending upon contaminants and concentrations, operation and maintenance costs can become costly over time. The typical soil vapor extraction operational time is 2-3 years.

6. Bioventing: This alternative for deep soil (10-100 ft) describes the removal action by which vertical vapor air injection and air evacuation wells are installed within areas requiring treatment and subjected to positive/negative pressure in order to provide oxygen to aerobic microorganisms for the purpose of enhancing and maintaining the biotic degradation of contaminants in the subsurface. Above ground, vapor treatment devices, such as thermal burners or carbon filters are applied to clean the low flow of extracted vapors prior to their discharge to the atmosphere. This technology can only be applied where contaminants are aerobically biodegradable. Toxic vapor treatment permits are required by the SCAQMD and can delay projects. This approach is relatively well researched and an established technology. The capital cost of equipment is typically low, however depending upon contaminants and concentrations, operation and maintenance costs can become costly over time. The typical bioventing operational time is 2-4 years.

7. Deep Excavation: This alternative for deep soil (10-100 ft) describes the removal action by which deep soil is excavated and removed for off-Site disposal. The technique for excavating soil at depth is to use a bucket auger, which drills out soil vertically using a large diameter auger, and can reach extended depths, limited simply by the length of the axial steel shaft that advances the auger. Excavated holes are immediately backfilled with either clean fill or slurry, so that the equipment and personnel can safely operate, moving on to the next boring. Successive boring advancements are used to carve out the entirety of the excavation extents. Deep excavation via bucket auger can be a slow process. Large-scale or very deep excavation operations can take months to complete, whereas the same volume of soil in a shallow setting could be excavated using traditional means in only days. Based upon contaminant concentrations, stockpiles would be combined or segregated according to disposal facility requirements. The selection of disposition facilities would be based upon the results of profile samples, however it is anticipated that the soil from this site will be considered non-hazardous and could be sent for thermal treatment or buried as landfill daily cover. Once approved for off-site transport, haul trucks would be loaded, covered, and manifested for delivery to the soil's final destination. This approach is relatively well researched and an established technology. This alternative may or may not treat or reduce the contamination, but removes the source of contamination from the site with high

certainty. Compared with other types of treatment technologies, the cost of deep excavation and off-site disposal are very high. Deep excavation is a moderate duration remedial approach.

8. Thermal Treatment: This alternative for deep soil (10-100 ft) describes the removal action by which heat is used to thermally destruct as well as enhance the vapor recovery of volatile chemicals. As with SVE, vertical vapor suction wells are installed within areas requiring treatment and subjected to vacuum in order to pull contaminants from the subsurface, but are supplemented by similarly-installed vertical heat probes that raise the temperature of the soil in the subsurface. Thermal enhancement can also be applied using the injection of steam, although this is less common. Above ground, vapor treatment devices, such as thermal burners or carbon filters are applied to clean the extracted vapors prior to their discharge to the atmosphere. Special versions of this off-gas treatment equipment are required to deal with the high temperatures of incoming vapor and fire/explosion protective devices must be used where this technology is applied on flammable materials such as gasoline. This technology can only be applied where contaminants are volatile (i.e., easily evaporated). Toxic vapor treatment permits are required by the SCAQMD and can delay projects. The capital cost of wells, heating probes, and equipment is high and operations costs are also very high due to the use of electricity to generate the heat. This technology has several benefits: first, the level of certainty in achieving cleanup goals is very high; second, the time to complete remediation is relatively short, as the heat greatly enhances the recovery and destruction of the contamination; third, latent heat remaining after the system is deactivated and demobilized encourages biological kinetics which can take care of residual contamination. The typical duration of a thermal treatment project is 1 year. This technology is considered relatively innovative, but is gaining recognition with regulatory agencies.

9. Pump and Treat: This alternative for saturated zone remediation describes the removal action by which groundwater pumping wells are used to extracted contaminated water, making it accessible for above-ground treatment. After conducting pump tests and other studies, locations are selected for the installation of pumping wells such that the maximum contamination can be captured with the minimum amount of otherwise clean groundwater, within the zone of treatment. Submersible pumps are installed within these wells, which direct pre-determined flow rates of groundwater towards a single receiving treatment plant. The treatment plant is equipped with pumps, controls, tanks, filters, and/or other treatment mechanisms sufficient to meet discharge water quality goals. Pump and treat systems typically discharge to surface water bodies (i.e., storm

drains, for instance) under permit by the National Pollution Discharge Elimination System (NPDES) regulatory body, which in this case is the RWQCB. A pump and treat system is, by its nature, inefficient, in that it captures contaminants in a very diluted form, eliminating a small mass of contaminants by treating a very large volume of groundwater. The spacing and screen design for pumping wells must be carefully selected and a thorough understanding of the Site hydrogeology is required. This approach is relatively well researched and an established technology. Permitting, construction, and operation costs of pump and treat systems are all relatively high. The typical life of a pump and treat remedial alternative is 7 to 15 years.

10. Air Sparging – This alternative for saturated zone remediation describes the removal action by which atmospheric air is injected at high flow rates into the contaminated aquifer for the purpose of volatilizing dissolved-phase contaminants, whereby they are captured in the vadose zone above by a soil vapor extraction system. Above ground, vapor treatment devices, such as thermal burners or carbon filters are applied to clean the extracted vapors prior to their discharge to the atmosphere. This technology can only be applied where contaminants are volatile (i.e., easily evaporated). Toxic vapor treatment permits are required by the SCAQMD and can delay projects. No WDR permits are required for the injection of air. The spacing of air sparging wells must be carefully selected, and a good understanding of the hydrogeology is required. This approach is relatively well researched and an established technology. The capital cost of equipment is typically moderate, however depending upon contaminants and concentrations, operation and maintenance costs can become costly over time. The typical air sparge/vapor extraction operational time is 2-3 years.

11. Chemical Oxidation – This alternative for saturated zone remediation describes the removal action by which oxygen-releasing compounds are injected into the aquifer to raise dissolved oxygen levels and oxidation-reduction potential for the purpose of spurring enhanced aerobic biological degradation of petroleum hydrocarbons and VOCs. These materials can be injected through either temporary or permanent injection wells. Injection materials can be oxygen or ozone gas, as well as solids or liquids such as hydrogen peroxide or Oxygen Release Compound® (ORC®). The selection of whether permanent or temporary injection infrastructure is selected will depend on the transmissivity of the aquifer soils, the concentrations of dissolved-phase contaminants, the access availability to the area, and the selected substrate type. Above-ground infrastructure required ranges from no infrastructure at all (injected ORC, for instance, injected through temporary probes) to requiring an equipment compound, permanent injection wells and transference piping (oxygen gas injection, for instance). A WDR

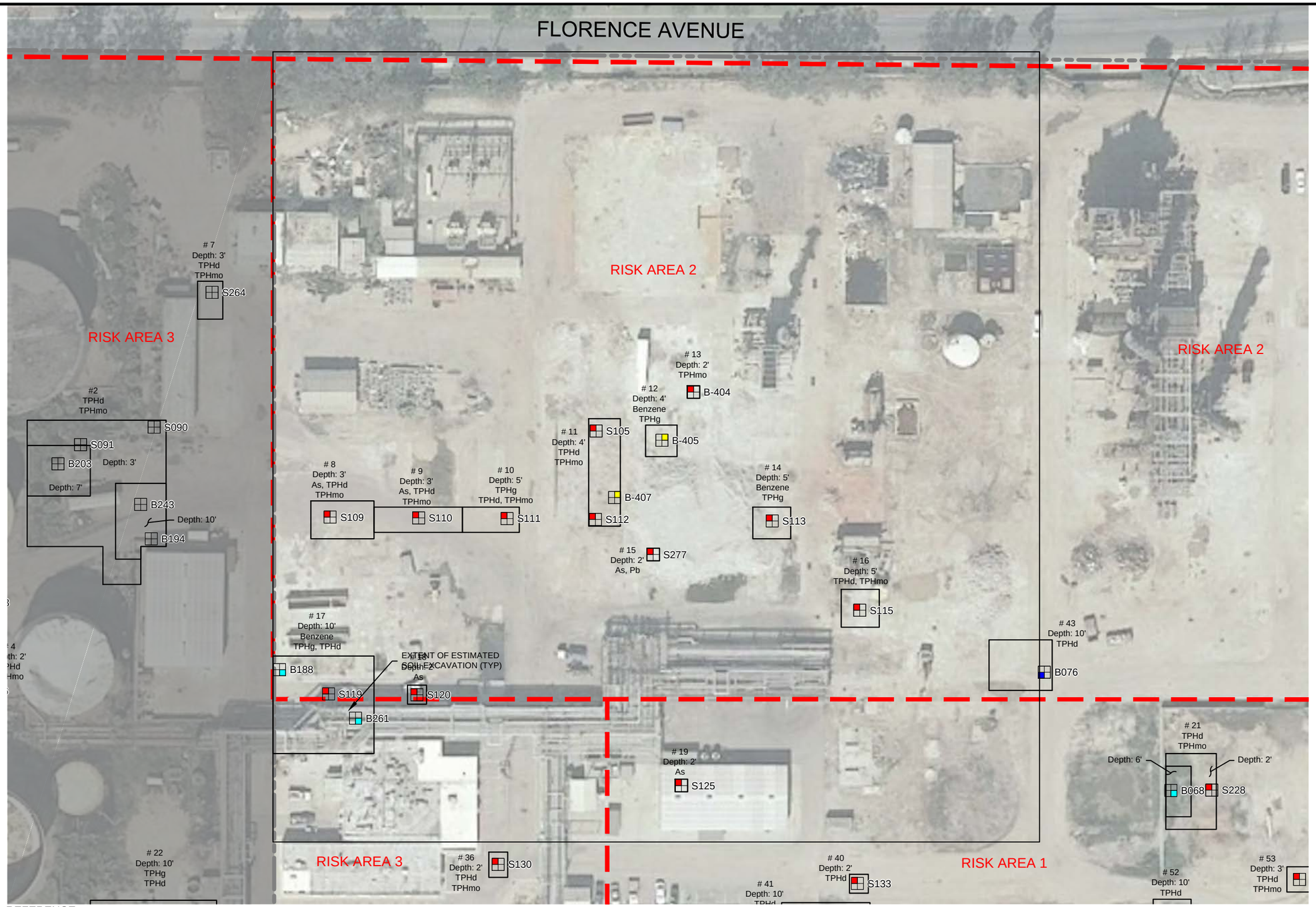
permit is required for this type of in-situ remediation. This approach is relatively well researched and an established technology. The capital cost for this alternative ranges from moderate to high, depending on several factors. The largest determining factors in cost are typically contaminant concentrations and access. The duration of the remedial effort is typically between 6 months to several years.

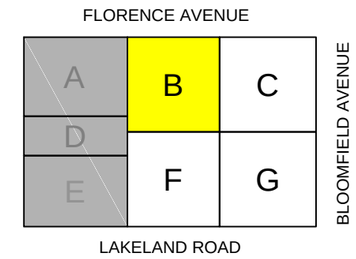
12. Biosparging – This alternative for saturated zone remediation describes the removal action by which atmospheric air is introduced to the impacted area at low flow rates for the purpose of introducing oxygen to aerobic microorganisms, enhancing and maintaining the biotic degradation of petroleum hydrocarbon and VOCs. This approach is relatively well researched and an established technology. It can only be applied where contaminants are aerobically biodegradable, and relies in part on natural processes, which can be unpredictable. Biosparging employs injection wells at lower density than air sparging or chemical oxidation. Vapor extraction wells, again at lower density spacing than with air sparging, typically accompany biosparging wells but operate at lower flow rates thereby limiting the size/capacity of off-gas treatment equipment. Toxic vapor treatment permits are required by the SCAQMD and can delay projects. No WDR permits are required for the injection of air. Capital costs for the installation of treatment wells and air injection equipment are low to moderate.

13. Monitored Natural Attenuation: This alternative for saturated zone remediation describes the removal action by which naturally occurring aerobic microorganisms are allowed to degrade petroleum hydrocarbons and VOCs without any artificial enhancements such as oxygen or nutrients. This approach is relatively well researched and an established technology. The success of this technology is dependent upon the aquifer's chemistry, since oxygen is typically consumed quickly and secondary ions are necessary to contribute to the oxidation process. These include sulfate, nitrate, and iron ions. This approach is generally more effective at sites exhibiting very low relative concentrations of contaminants, where natural process do not become overwhelmed by oxygen demand and where levels of contaminants are not toxic to the bacteria. Natural attenuation exhibits a very low cost, however is time intensive. More commonly, natural attenuation is more appropriately relied upon to "finish" a groundwater remediation project after more aggressive technologies have been applied and have achieved a level of success that is close the final goal.

APPENDIX E

SITE PLANS SHOWING SHALLOW SOIL EXCAVATIONS



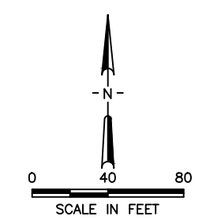


KEYMAP FOR SITE SECTIONS

REPORTING LIMITS

ARSENIC (As)	≥	13.0	mg/kg
BENZENE	≥	4.0	mg/kg
DIBENZO (D(a,h)a)	≥	0.6	mg/kg
LEAD (Pb)	≥	320*	mg/kg
TPHg	≥	2,500	mg/kg
TPHd	≥	5,000	mg/kg
TPHmo	≥	10,000	mg/kg

*SEE EXPLANATION IN SECTION 4.2



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LEGEND:

SITE PROPERTY/BOUNDARY LINE
REDEVELOPMENT AREA LINE

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OVER REPORTING LIMIT 6.0' - 10.5' BGS
S025 SAMPLE ID
OVER REPORTING LIMIT 1.5' - 3.0' BGS
OVER REPORTING LIMIT 3.0' - 6.0' BGS

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SITE PLAN SHOWING
SITE SECTION 'B' PROPOSED
SHALLOW SOIL EXCAVATION

FIGURE: E1

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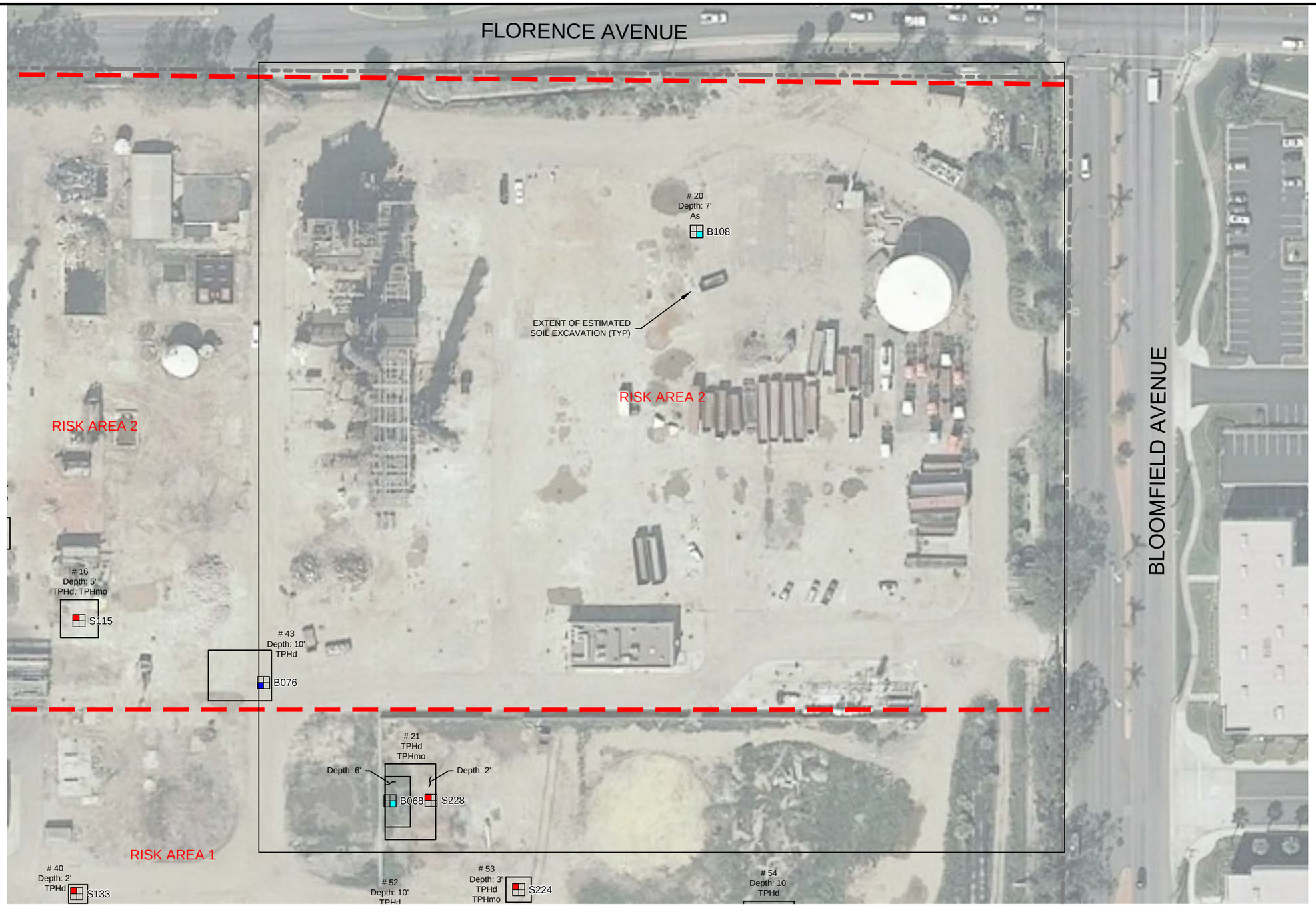
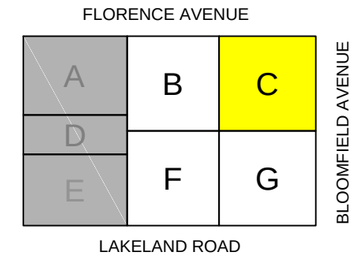


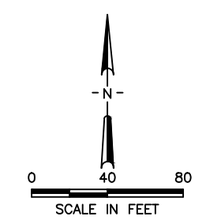


KEYMAP FOR SITE SECTIONS

REPORTING LIMITS

ARSENIC (As)	≥	13.0	mg/kg
BENZENE	≥	4.0	mg/kg
DIBENZO (D(a,h)a)	≥	0.6	mg/kg
LEAD (Pb)	≥	320*	mg/kg
TPHg	≥	2,500	mg/kg
TPHd	≥	5,000	mg/kg
TPHmo	≥	10,000	mg/kg

*SEE EXPLANATION IN SECTION 4.2



REFERENCE:

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LEGEND:

SITE PROPERTY/BOUNDARY LINE

REDEVELOPMENT AREA LINE

OVER REPORTING LIMIT 0.0' - 1.5' BGS

OVER REPORTING LIMIT 6.0' - 10.5' BGS

S025 SAMPLE ID

OVER REPORTING LIMIT 1.5' - 3.0' BGS

OVER REPORTING LIMIT 3.0' - 6.0' BGS

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SITE PLAN SHOWING
SITE SECTION 'C' PROPOSED
SHALLOW SOIL EXCAVATION

FIGURE: E2

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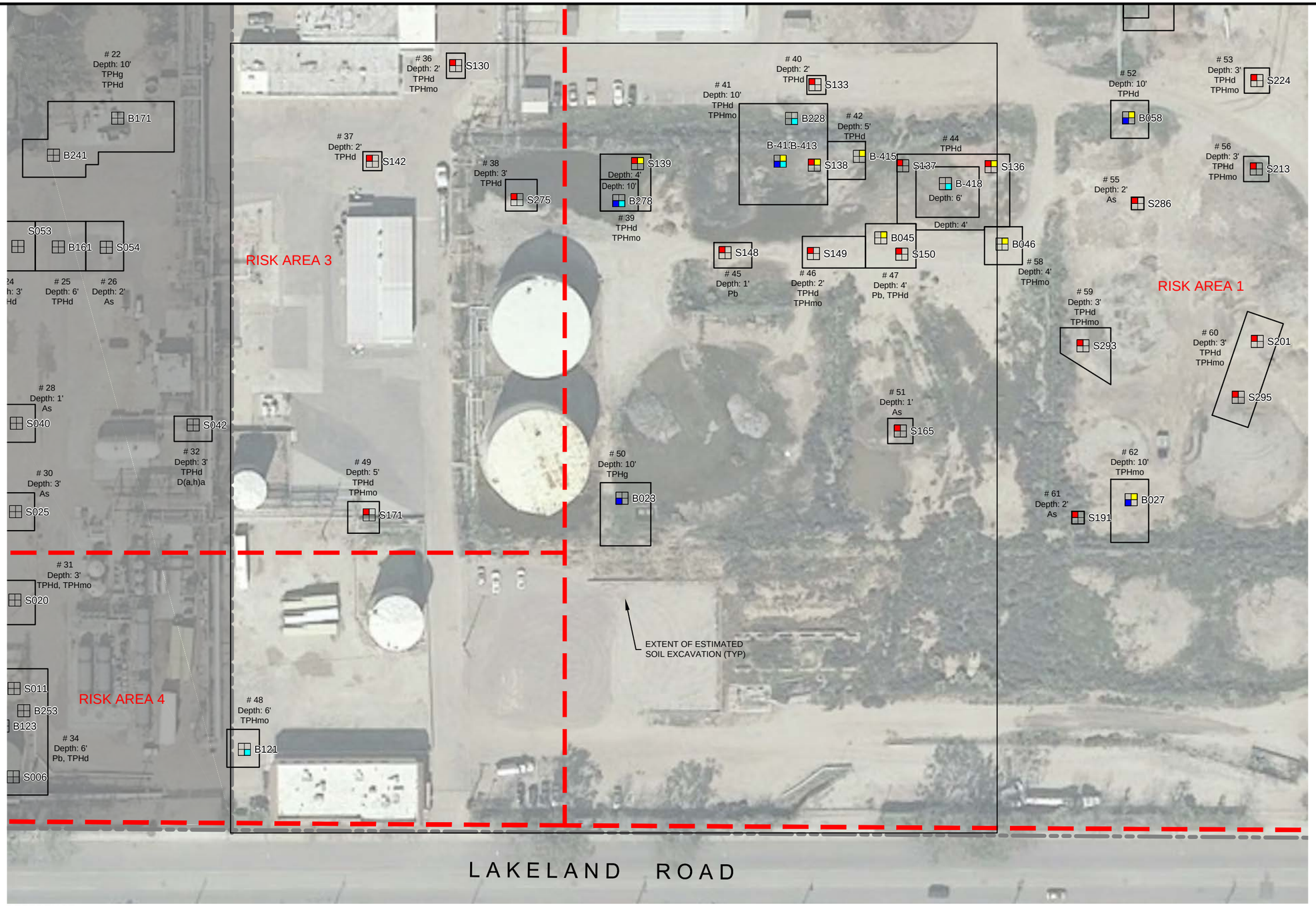

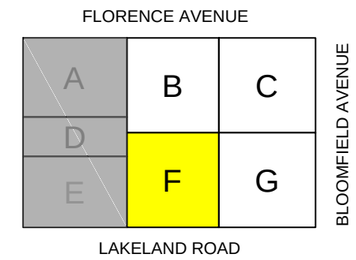

KEYMAP FOR SITE SECTIONS

REPORTING LIMITS

ARSENIC (As)	≥	13.0	mg/kg
BENZENE	≥	4.0	mg/kg
DIBENZO (D(a,h)a)	≥	0.6	mg/kg
LEAD (Pb)	≥	320*	mg/kg
TPHg	≥	2,500	mg/kg
TPHd	≥	5,000	mg/kg
TPHmo	≥	10,000	mg/kg

*SEE EXPLANATION IN SECTION 4.2

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LEGEND:
SITE PROPERTY/BOUNDARY LINE
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SITE PLAN SHOWING
SITE SECTION 'F' PROPOSED
SHALLOW SOIL EXCAVATION

FIGURE: E3

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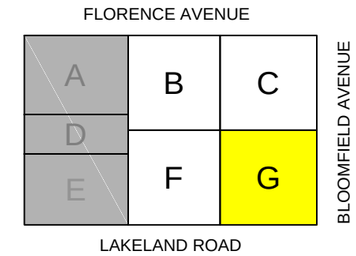

KEYMAP FOR
SITE SECTIONS

REPORTING LIMITS

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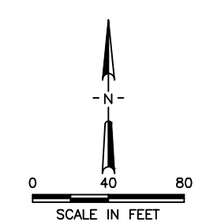
TPHmo	≥	10,000	mg/kg

*SEE EXPLANATION IN SECTION 4.2



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SITE PLAN SHOWING
SITE SECTION 'G' PROPOSED
SHALLOW SOIL EXCAVATION

FIGURE: E4

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APPENDIX F

HEALTH AND SAFETY PLAN

Health and Safety Plan to be Provided by Selected Remediation Contractor

APPENDIX G

SOIL MANAGEMENT AND DUST MONITORING PLAN

Soil Management Plan

for

Former Powerine Refinery

Prepared By

MUREX environmental, inc

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Attachments

Particulate Monitoring Form

1.0 INTRODUCTION

This Soil Management Plan (SMP) has been prepared by Murex Environmental, Inc. (Murex) for proposed activities at the former Powerine refinery located at 12345 Lakeland Road in Santa Fe Springs, California (Site, see **Figure 1**) on behalf of Lakeland Development Company (Lakeland).

The Site is approximately 55 acres in size and is bordered to the north by Florence Avenue, to the south by Lakeland Road, and to the east by Bloomfield Avenue (**Figure 1**). The Site is bordered on all sides by commercial and industrial properties.

The Site was operated as an oil refinery from the 1930s until July 1995. Oil-production-related structures such as ponds and aboveground holding tanks may have also been located onsite during these years (Haley & Aldrich, Inc. [Haley & Aldrich], 2005). The refinery ceased operations in July 1995. Since then, refinery structures, such as tanks, overhead piping, and other infrastructure, have been removed in stages. The remaining refinery structures are scheduled to be removed for reuse elsewhere or recycling prior to the redevelopment of the property for commercial/industrial use.

Previous refining operations included processing crude oil into several grades of fuel including kerosene, leaded gasoline and aviation fuel, unleaded gasoline, jet fuel, high and low-sulfur diesel, fuel oil, and petroleum coke. Soil and groundwater quality beneath and in proximity to the Site have been impacted by accidental spills. Soil and groundwater investigations are being conducted pursuant to a CAO No. 97-118 issued by the LARWQCB to Powerine Oil Company (CENCO Refining Company) in 1997 (Haley & Aldrich, 2005).

1.1 Soil Conditions

In general, chemicals of concern (COCs) at the Site include TPH as various mixtures, VOCs, PAHs, and petroleum product additives and processing chemicals (including metals and other VOCs).

The Site subsurface is divided into the following major horizons for purposes of remedy selection: 1) shallow soil (0 to approximately 10 ft-bgs); 2) deep soil (10 to approximately 90 to 100 ft-bgs, the approximate depth to groundwater); and 3) groundwater.

The shallow zone extends from ground surface to approximately 10 ft-bgs. Based upon the findings of the HRA and the HRA Addendum, COCs in the surface soil samples include TPHg

(gasoline-range organics [GRO]), TPHd (diesel-range organics, [DRO]), and TPHmo (motor oil-range organics [MRO]), VOCs, dibenzo(a,h)anthracene, lead, and arsenic.

1.2 Purpose & Scope

Given the likelihood of encountering soil containing hazardous materials during major earthwork performed on-Site, this plan has been designed to guide construction and earthwork contractors in the best management practices (BMPs) for excavations, utility installations, grading, compaction, and other earthwork activities.

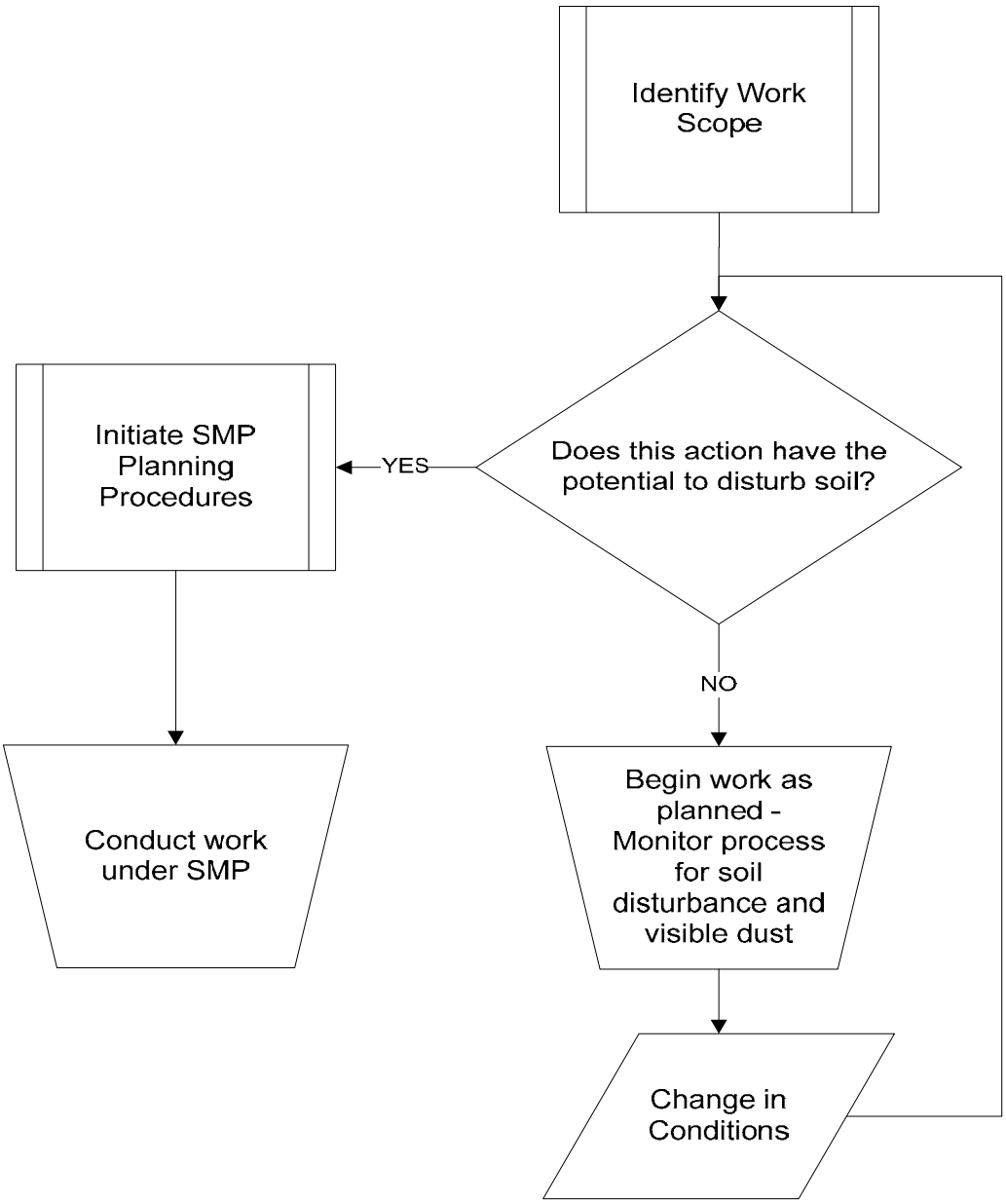
This SMP contains the following information:

- A summary of Site topography and soil conditions;
- Decision matrix for the application of the SMP procedures;
- Description of applicable earthwork and maintenance activities that will trigger the SMP procedures;
- Health & safety procedures for worker safety, personal protective equipment, and training;
- Air pollution measurement and control measures for compliance with SCAQMD Rules 403 and 1166;
- Stormwater pollution control measures and best management practices (BMPs) to prevent runoff;
- Truck traffic planning procedures;
- Recommended Site security procedures;
- Stockpile management;
- Stockpile profiling;
- Decontamination procedures; and
- Record keeping procedures.

This SMP is organized into procedures for conducting construction activity in clean fill, and provides contingencies for the management of contaminated soil and groundwater, should it be encountered.

2.0 SMP APPROACH

The following decision tree describes the use of the SMP, as a guidebook that should be consulted for any activities, construction or otherwise, that have the potential to expose or disturb soil containing hazardous substances:



2.1 Earthwork Activities

Activities that disturb contaminated soil can lead to the exposure of construction workers and the public. Such exposure includes dermal contact, inhalation of dust, or the spread of potentially contaminated soil off-Site, through wind-blown dust or storm water run-off. Typically, excavation, grading and the installation of utility pipelines, such as sewer and storm drain, have the greatest potential for soil disturbance and worker exposure.

2.2 Applicable Regulations

The following regulations, rules, and guidelines will apply to earthwork activities where soil may potentially be impacted by petroleum hydrocarbons.

2.2.1 Health & Safety

This SMP has been prepared to provide standard procedures for the management of clean fill on a construction Site, where the possibility exists of encountering contaminated fill and native soil. Therefore, it is recommended that contractors will be responsible for operating in accordance with the most current requirements of Title 8, California Code of Regulations, section 5192 (8 CCR 5192) and Title 29, Code of Federal Regulations, section 1910.120 (29 CFR 1910.120), Standards for Hazardous Waste Operations and Emergency Response (HAZWOPER).

On-Site personnel are responsible for operating in accordance with all applicable regulations of the Occupational Safety and Health Administration (OSHA) outlined in 8 CCR General Industry and Construction Safety Orders and 29 CFR 1910 and 29 CFR 1926, Construction Industry Standards, as well as other applicable federal, state and local laws and regulations. All personnel shall operate in compliance with all California OSHA requirements.

In addition, workers designated as those who will excavate, manage, stockpile, or transport impacted soils should carefully comply with the Site-specific health and safety plan (HASP). The HASP provides guidelines on how to direct the work, personnel monitoring procedures, and sets action levels for chemical exposure. Workers operating under the HASP should be trained under a 40-hour OSHA HAZWOPER curriculum, and have the proper personal protective equipment available, as prescribed in the HASP.

2.2.2 Air Pollution Control

South Coast Air Quality Management District (AQMD) has rules, which address excavation of petroleum-impacted soil (Rule 1166) and fugitive dust (Rules 402 and 403). Rule 1166 also applies to the excavation of soils containing volatile organic compounds (VOCs) and

will be considered as a part of the contingency portion of this SMP, as the oily soils reportedly contain detectable concentrations of VOCs.

Rule 402 prohibits the discharge into the air from any source air contaminants or other material that would cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such person or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

Several elements of Rule 403, such as protocols for mitigation of potential fugitive dust emissions, have been incorporated into this SMP. Excavation, loading, and transport of impacted soils shall be in compliance with AQMD Rule 403 prevention, reduction, and mitigation measures for fugitive dust emissions. However, notification of AQMD is required only for large operations (disturbing more than 50 acres or moving more than 5,000 CY per day). Therefore, no notification or filing of a Fugitive Dust Emission Control Plan is required due to project size.

2.2.3 Storm Water

Storm Water Pollution Prevention (SWPP) measures (such as sandbags surround the area of disturbed earth, etc.) will be installed by the contractor and inspected by a registered professional civil engineer prior to the start of earthwork at the Site. A SWPP plan will be written in a manner which best management practices (BMPs) for earthwork at urban sites are presented in depth. The soil excavator will be responsible for maintaining the SWPP measures that are installed at the start of work, and throughout the duration of the project, until the Site's permanent storm water management system is fully operational.

Typical SWPP measures and SWPP plan requirements for construction at sites with potentially impacted soil are discussed in Section 4.

2.2.4 Truck Traffic Plan

If major truck traffic is expected as a result of soil conveyance, it is likely that the City of Santa Fe Springs will require a truck traffic plan be filed for a truck traffic permit. Plans must include the number and size of trucks that will transport the soil each day during work, and include the path by which the trucks will travel, in order to ensure City approval of truck traffic corridors, and so that truck traffic does not cause undue nuisance to residential neighborhoods. In the case of the proposed work at the Site, no major truck traffic is anticipated. A truck traffic plan, if required, will be filed with the City of Santa Fe Springs when the gradings are pulled.

3.0 IDENTIFICATION OF IMPACTED SOIL

The following section describes how workers can recognize the presence of petroleum-impacted soil.

3.1 Initial Screening

As earthwork activities commence, it is recommended that caution be exercised in opening large areas of open soil face at once. Excavations, especially deeper excavations, such as those for footings, grading, or utility installation should proceed slowly at first in each new section of the Development Area. This is to allow the identification of hazardous substances in soil prior to exposing large quantities to the atmosphere.

Hazardous materials such as petroleum hydrocarbons and VOCs are often seen or detected by their odor initially.

As organic chemicals such as petroleum hydrocarbons and VOCs degrade in moist soil over time, oxygen is metabolized, and soil typically becomes dark in color (darker than the surrounding soil that does not contain these compounds). Depending on the original color of the soil, impacted soil can often be grey to dark grey, dark brown, or black.

Impacted soil may also be discovered when excavations uncover objects, such as piping, once used to convey petroleum products. Other clues can include pieces of asphalt (once used to coat oil reservoir berms) or concrete and wood (used to construct the reservoirs and roofs).

In addition to visual clues, several types of individual chemical compounds associated with the natural weathering of petroleum hydrocarbons give off a strong olfactory response once uncovered.

Once discovered, earthwork in the area should be monitored by a qualified environmental professional to ensure worker safety and proper documentation. If a hazardous material is encountered, work will cease until a direct reading device such as a PID can be used to assess the material for VOCs and TPH. Once inspected by an environmental professional and the soil is determined not to contain hazardous substances, work may continue using existing work crews and procedures under the oversight of the environmental professional.

4.0 MANAGEMENT OF IMPACTED SOIL

Planning for work to be conducted under the SMP will result in properly trained personnel conducting the work, and that the work will be conducted so as to limit the potential exposure of workers to hazardous substances in soil as well as appropriate handling and management of disturbed soil. This section describes Site procedures required for managing impacted soil once it is suspected to be or is discovered in an active work area.

4.1 Security Measures

The work areas should be delineated in such a way so as to preserve the safety of the public at large. Appropriate barriers and/or privacy fencing will be installed prior to beginning the excavation process to ensure that the work areas are secure and safe. To ensure trespassers or unauthorized personnel are not allowed near work areas, security measures may include, but are not limited to:

- Maintaining a visitor's log. Visitors shall have prior approval from the Site manager to enter the Site. Visitors shall not be permitted to enter the Site without first receiving site-specific health and safety information from the Site safety coordinator.
- Installing barrier fencing to restrict access to sensitive areas such as exclusion zones.
- Providing adequate Site security to ensure unauthorized personnel have no access to work areas and/or impacted materials.
- Before leaving the Site, visitors must sign out in the visitor's log.
- Maintaining a safe and secure work area, including areas where equipment is stored or placed, at the close of each workday.

Persons requesting Site access will be required to demonstrate a valid purpose for access and if access to work areas and/or impacted materials is planned, provide appropriate documentation to demonstrate they have received proper training required by the Site-specific HASP.

The following sections describe the various required components for adherence to this SMP.

4.2 Health & Safety

Work activities involving the excavation or disturbance of soil in areas potentially impacted by hazardous substances will be conducted in accordance with health and safety protocols

in Title 29 CFR, Section 1910.120 and 8 CCR 5144 and 5192. Workers involved in the activities will be trained and certified under OSHA, 40-hour hazardous waste operations (HAZWOPER) course content, and led by a qualified individual or agency. In addition, the planning and training for Site-specific actions as well as the HASP will include:

- Identification and description of potentially hazardous substances that may be encountered during field investigation activities;
- Specification of personal protective equipment (PPE) and clothing for the Site activities; and
- Training on measures that may be implemented in the event of an emergency.

A Site safety meeting will be held with project personnel and subcontractors prior to commencing fieldwork. The meeting will cover potential physical and chemical hazards and outlined measures to be taken in the event of an emergency.

4.3 Storm Water Pollution Prevention (SWPP)

A Storm Water Pollution Prevention Plan (SWPPP) will be written by a registered professional civil engineer with a Qualified SWPPP Developer (QSD) certification. The SWPPP shall include detailed information on all potential pollutant releases and their sources. Any sources of sediment resulting from construction activity will also be characterized with their respective control measures. Site BMP controls shall be fully detailed and supported with calculations. Stabilization BMPs for eliminating post-construction pollutants will also be outlined and explained. BMP selection, usage, and maintenance will demonstrate compliance with the requirements of the General Permit.

Typical SWPP measures for construction at sites with potentially impacted soil include:

- Sand bag barricades surrounding the work areas to prevent storm water from washing soil off-Site;
- Silt filters installed at storm drain inlets;
- Crushed rock or rumble plates at Site entry/exit points, to shake loose soil from truck tires;
- An inspector stationed at truck entry/exit points to sweep and clear loose soil from large trucks;
- Street cleaning trucks, which pick up the soil that is tracked outside the entry/exit points;
- Waterproof soil storage bins for impacted soils;

- Plastic sheeting placed under and weighted over stockpiles of segregated soil pending profiling or disposal; and
- Inspection and re-adjustment of SWPP measures during and after rain events or periods of heavy wind by a QSD certified registered professional civil engineer.

4.4 Procedures for Soil Management

Overall, the goals of proper soil management are 1) the reduction in mobility of potentially contaminated soil, 2) reduction of construction/facility worker exposure to potentially contaminated soil, 3) reduction of off-Site receptor exposure to potentially contaminated soil, and 4) maintaining control of potentially contaminated soil.

Once moved from its location, or otherwise disturbed, soil containing hazardous substances is considered a waste product, and should not be re-used as backfill. However, if it is not necessary to disturb soil that has been identified as impacted, there are circumstances in which the soil may be left in place. These decisions should be made by a qualified environmental professional, such as a registered civil engineer, and in consultation with the appropriate regulatory agency. The segregation, stockpiling, profiling, and disposal procedures for impacted waste soil are outlined below.

Where excavation is necessary, the excavated soil will be removed in a manner that reduces the potential to generate particulates and dust from excavation, as well as from segregated and stockpiled soils.

The figure on Page 5, Section 2.0, displays a procedural decision tree for impacted soil management, which can act as a guide for the environmental oversight professional or Site superintendent on the Project.

Dust mitigation procedures, soil stockpile management procedures, and procedures for sampling, conducted in order to screen, segregate, and determine disposition of excavated soil are described below.

4.4.1 Dust Control, Measurement, & Compliance

The most prevalent mechanism for unplanned mobility and exposure is dust generation, and therefore, many of the recommended procedures involve the control of dust at the site of the operation.

The AQMD is the regulatory agency that administers limits on the release of air contaminants, including particulate matter released from construction activities.

According to AQMD Rule 403 (Fugitive Dust), construction operations should be conducted in such a way as to reduce the amount of particulate matter entrained in the ambient air as a result of fugitive dust sources. Included in Rule 403 are Best Available Control Measures related to construction activities (see Table 1 of Rule 403 in **Appendix H**). This table should be referred to as a guide.

In order to comply with Rule 403, measures will be implemented to:

1. Prevent dust from remaining visible in the atmosphere beyond the fence line of the Site.
2. Minimize fugitive dust by using best available control measures.
3. Prevent particulate matter from exceeding 50 micrograms per cubic meter ($\mu g/m^3$).

Several dust control measures may be implemented during excavation activities. In general, the most widely used dust suppression technique is spray water, and therefore, construction or excavation activities should plan to have both a water source and delivery method available at the location of the work.

Dust suppression during excavation will be performed by lightly spraying or misting the work areas with water. Water mist may also be used on soil placed in dump trucks prior to transporting the material to an off-Site facility.

Equipment and vehicles used to load and move the impacted soil will be operated at speeds that minimize generating airborne particulates. During soil transfer operations, the distance that soil is dropped onto stockpiles or into trucks will be minimized and soil transfer will take place on the leeward side of trucks and/or stockpiles to reduce the potential to generate particulates. If possible, soil stockpiles will be placed in areas that are shielded from prevailing winds. During transport of impacted soil off-Site, transport trucks will cover their loads with a wind dust cover to reduce the potential for generating particulates. Excavation activities will not be conducted in times of high wind conditions (i.e., winds exceeding 25 miles per hour in excess of 15 minutes).

Work will be stopped if wind speeds exceed 25 miles per hour sustained for 15 minutes or longer. Work will resume when wind speeds have decreased to less than 25 miles per hour on a sustained basis.

Additional control measures are listed section 5, Dust Monitoring Plan.

4.4.2 Stockpile Management

Soil material will be placed in containers and stockpiles as appropriate. Stockpiles may be placed directly on relatively impermeable surfaces such as asphalt and concrete, if available. Polyethylene sheeting will be placed between exposed earth and stockpile soils. Each stockpile not contained in a roll-off bin will be covered with polyethylene sheeting, and a perimeter berm will be constructed to minimize the possibility of stormwater run-on or runoff that would be a mechanism for transporting potentially-impacted soils. In addition, the sheeting for stockpiles potentially exposed to precipitation will be anchored to the berm. Stockpile covers and berms will be maintained until the soil is characterized and disposed. Containers and stockpiles will be profiled in accordance with the section shown below.

During stockpiling of soils, fugitive dust will be mitigated by spraying the stockpiles with water, and keeping the stockpiles covered with sheet plastic when not in use.

4.4.3 Container and Stockpile Sampling and Analysis

Each roll-off bin or stockpile generated during work will be sampled for waste profiling purposes. Arrangements for appropriate off-Site disposal will be made accordingly.

Container Sampling

For 8- and 20-cubic-yard roll-off bins, collect two discrete soil samples from at or near the centroids of each half of the bin, at a minimum.

Stockpile Sampling

In general, the number of stockpile samples will be determined in accordance with the following, and any other facility requirements.

- Collect a minimum of two discrete random soil samples from stockpiles that are 100 cubic yards or less in volume.
- Collect one additional soil sample per 100 cubic yards of stockpiled material between 100 and 500 cubic yards of soil.

Discrete samples will be collected from random locations within the stockpile. Because stockpile geometry may vary considerably, professional judgment should be used in selecting discrete sampling locations with the objective of generating representative analytical data. Samples will be collected using a hand auger or similar equipment. Samples should not be collected from depths less than 12 inches from the exposed surface

of the stockpile. Discrete samples should not be combined (composited) but, rather, should be kept discrete for waste classification and testing.

4.4.4 Waste Profiling

Prior to loading and transportation from the Site to the disposal facility, impacted soil excavated will be profiled according to the requirements of the disposal facility. Based on the findings of previous investigations in the vicinity of the Development Area, it is anticipated that the profile samples will be analyzed for the following:

- TPH by EPA method 8015M;
- VOCs by EPA method 8021;
- CAM 17 Metals by EPA method 6010B/7400;
- Soluble metals by the waste extraction test (WET) for individual metals that exceed 10 times the associated California Code of Regulations (CCR) Title 22 Total Threshold Limit Concentration (TTLC); and
- PAHs by EPA 8270.

Profiling will be accomplished by submitting analytical data from stockpile samples collected during material handling. If additional profiling is required from the stockpiled soil, sample frequency as well as possible additional selected analysis methods will be chosen based upon requests by the disposal facility.

The samples will be collected using a hand trowel, placed in 8-ounce glass jars, and placed in coolers for shipment. Chain-of-custody records are used to document sample collection and shipment to laboratory for analysis. Each cooler containing samples for analyses will be accompanied by a chain-of-custody record. The chain-of-custody record will identify the contents of each shipment and maintain the custodial integrity of the samples.

4.4.5 Waste Transportation and Disposal

During transport or off-Site disposal activities, trucks will enter the Site assisted by a flag person to affect safe entry onto the Site. Trucks will be temporarily staged on-Site outside of the excavation area, trucks not certified as clean diesel will not be allowed to idle in the staging area but rather start and stop the engine to minimize atmospheric impacts and facilitate communication with the truck boss. As one truck is loaded and departs the Site, the next truck will move into the soil staging area to be loaded. Vehicles on the property will be required to maintain slow speeds (i.e., less than 5 miles per hour) for safety purposes and for dust control measures.

Before exiting the work area, the vehicle's tires will be inspected to ensure that soil remains on-Site. The cleanup/decontamination area will be established as close to the loading area as possible to minimize spreading of soil. Before trucks leave the Site, the contractor will be responsible for inspecting each truck to ensure that the payloads are adequately covered, the trucks are brushed clean of soil that may have fallen on the outside of the truck, and that the soil is properly manifested.

The trucks will vacate the property with the assistance of a flag person so drivers can safely merge into traffic.

Transportation of waste soil will be conducted under appropriate manifest, for the type of disposition. Disposal of waste will be in accordance with applicable State and Federal waste regulations, including the Resource Conservation and Recovery Act (RCRA).

Waste manifests, whether hazardous or non-hazardous, will be completed and signed by an authorized owner representative.

4.4.6 Decontamination

Entry to the work area where the contaminated materials are encountered should be limited to essential personnel to avoid unnecessary exposure and related transfer of potential impacted soil. In unavoidable circumstances, equipment or truck(s) should be decontaminated in a designated decontamination area before leaving the Site.

Disposable equipment intended for one time use will not be decontaminated, but will be packaged for appropriate disposal. Relatively small equipment that comes into direct contact with potentially impacted soil or water will be decontaminated as described below.

1. Non-phosphate detergent and tap water wash, using a brush if necessary
2. Tap-water rinse
3. Initial deionized/distilled water rinse

Decontamination will occur prior to and after each designated use of a piece of equipment. Larger equipment, such as trucks and excavators that come into direct contact with potentially impacted soil or water will be decontaminated prior to leaving the Site to prevent the off-Site tracking of impacted soil. Trucks will be visually inspected before leaving the Site and any dirt adhering to the exterior surfaces will be brushed off and collected on plastic sheeting. The storage bins or beds of the trucks will be inspected to

ensure the loads are properly covered and secured. Excavation equipment surfaces will also be brushed off prior to removing it from the exclusion zone.

Equipment will be decontaminated in a pre-designated area on pallets or plastic sheeting. After decontamination, large-sized equipment shall be stored on plastic sheeting in non-impacted areas. Decontaminated small-sized equipment shall be stored in plastic bags. Any materials to be stored for more than a few hours shall also be covered.

Decontamination wash water will be collected and stored in drums, labeled, and profiled as potentially hazardous waste.

4.4.7 Recordkeeping

Documentation of field conditions and mitigation procedures will be noted in daily field reports. Field notes will document where, when, how, and from whom project information was obtained. Entries will be complete and accurate enough to permit reconstruction of field activities.

Entries of activities will be recorded daily in the field notes and at a minimum will include the following:

- Site name and address;
- Recorder's name;
- Team members and their responsibilities;
- Time of Site arrival and time of departure from the Site;
- Other personnel on-Site;
- Summary of any on-Site meetings;
- Quantity of soils excavated and general description of soil and soil location;
- Quantity of soils temporarily stored on-Site, showing a sketch of the stockpile locations;
- Type and quantity of soils shipped by each transporter and manifest numbers associated with shipments;
- Deviations from this SMP;
- Personnel records;
- Monitoring results/records;
- Wind direction and relative speed;
- Levels of safety protection; and
- Calibration readings for any equipment used, and equipment model and serial numbers.

5.0 DUST MONITORING PLAN

This Dust Monitoring Plan (DMP) describes air monitoring for particulate matter (fugitive dust) during implementation of the VOC and TPH-impacted soil excavation activities at the Site in Santa Fe Springs, California. The dust monitoring activities will be conducted to:

- Comply with the AQMD Rule 403 as amended 3 June 2005; and
- Protect worker and community health.

Specifically, this DMP includes descriptions of:

- The Site and the proposed excavation and soil management activities;
- Implementation of AQMD Rule 403 monitoring;
- AQMD Rule 403 dust mitigation actions;
- AQMD Rule 403 recordkeeping requirements;
- Action levels for worker and community health;
- Implementation of worker and community health dust monitoring;
- Worker and community health dust mitigation actions; and
- Other worker and community health recordkeeping.

A copy of AQMD Rule 403 is presented in **Appendix H** of the RAP.

5.1 Soil Excavation and Management

It is proposed that heavy excavation equipment such as excavators, backhoes, front-end loaders, and scrapers will be used during this operation. Excavated soils will be temporarily stockpiled in an on-Site staging area for which will be placed in trucks under manifest for transport to an appropriately regulated facility.

5.2 Adjacent Properties

The Site is bordered on all sides by commercial and industrial properties. Residential properties lie within approximately 1/2-mile distance from the Site.

5.3 AQMD Rule 403 Monitoring

The purpose of Rule 403 is to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. Rule 403 applies to the soil remediation activities since excavating and backfilling can generate fugitive dust. The Site

is considered to be a "small site" under this Rule, based on the criteria that the disturbed area is less than 50 acres and that more than 5,000 cubic yards will not be exported on three or more days within one year. As outlined in Rule 403, "small" sites need only follow Table 1 of Rule 403.

In order to comply with Table 1 of Rule 403, the following measures will be implemented:

- Conduct observations for visible dust;
- Prevent dust from remaining visible in the atmosphere beyond the fence line of the Site;
- Minimize dust generation by using best available control measures; and
- Mitigate visible fugitive dust, if detected.

The AQMD Rule 403 (d) (3) states that no person shall cause or allow PM10 (particulate matter less than 10 microns in diameter) levels to exceed 50 micrograms per cubic meter ($\mu g/m^3$) when measured over a 5-hour period. The PM10 levels are determined by weighing the difference between upwind and downwind samples captured by high volume particulate filters over a 5-hour period. At its discretion, AQMD may conduct particulate sampling at any site where fugitive dust emissions are suspected.

5.3.1 Observations

In general, the approach to Rule 403 monitoring will be to implement routine dust control measures identified as best available control measures in Table 1 of the AQMD Rule 403 Handbook. The excavation contractor will be responsible for implementing dust control measures on a daily basis. Murex will be present to observe the excavation and soil management activities, and conduct air monitoring and recordkeeping activities, and will immediately notify the excavation contractor if visible dust emissions exceed 100 feet in length in any direction.

5.3.2 Dust Control Measures

As described in Table 1 of the Rule 403 Handbook, the following best available control measures will be conducted during the excavation activities:

- Pre-apply water to depth of proposed cuts.
- Re-apply water as necessary to maintain soils in a damp condition to ensure that visible emissions do not exceed 100 feet in any direction. An odor suppressant may also be used that act as an additional control agent for fugitive dust generation.

If visible dust is observed, the excavation contractor will implement dust control mitigation measures as summarized in Table 2 of Rule 403; which includes increasing dust control measures until no visible dust is observed. If additional watering is conducted and is ineffective or cannot be implemented satisfactorily (e.g., with no runoff or discharge from the Site), then these operations will be discontinued and alternative dust suppression measures will be implemented.

5.3.3 Recordkeeping

The AQMD does not require record keeping on sites defined by Rule 403 as "small" sites. However, Murex personnel will take field notes to document the observed field activities.

5.4 Site-Specific Worker and Community Health Air Quality Monitoring

During soil excavation and stockpiling activities, ambient air monitoring will be implemented to:

- Monitor potential on-Site impacts to ambient air from the work activities,
- Monitor potential off-Site (community) impacts during the work activities, and
- Assess whether mitigation measures are necessary to protect worker and/or community health.

5.4.1 Site Perimeter and Occupied Areas Air Quality Monitoring Calculations

TPH, VOCs, PAHs, and heavy metals may be bound to dust particles emitted from the Site during excavation activities. As such, particulate matter (PM) concentration levels have been derived for the protection of onsite workers and the community.

Rule 403 specifies that the perimeter PM action level for nuisance dust monitoring is 0.05 mg/m^3 greater than the measured upwind background level, based on a 15-minute time weighted average. To ensure that this concentration is protective enough for fugitive dust generated from impacted soil at the Site, the concentration was compared to separate PM concentration calculations developed for benz(a)anthracene, benzo(a)pyrene, dibenz(ah)anthracene, arsenic, and lead. A PM level of 0.05 mg/m^3 was used as the limit for fenceline concentrations for off-site residents and level of 5 mg/m^3 was used for on-site workers (industrial). The PM concentrations protective of chemical exposure based on the maximum soil concentration for each of the four areas were calculated using the following equation:

$$PM_{PCE} = RSL/[C_{maxsoil} \times (10^{-6}\ mg/kg) \times (1000\ \mu g/mg)]$$

Where PM_{PCE} is the PM concentration protective of chemical exposure (mg/m^3), RSL is either the residential or industrial air risk-based screening level (mg/kg), and $C_{maxsoil}$ is the maximum soil concentration for the site area (mg/kg). The USEPA air RSLs are used for each chemical except arsenic and lead. For arsenic, the residential and industrial air RSLs are estimated using the CalEPA IUR for arsenic (CalEPA, 2012). For lead, the USEPA National Ambient Air Quality Standard (NAAQS) for lead of 0.15 µg/m^3 was used for both the residential and industrial exposure scenarios.

If the PM_{PCE} is greater than or equal to the respective PM level, then the air concentrations for a particular chemical are expected to be at or below the respective RSL when the PM concentrations are at or below the respective PM dust level. For example, under a residential scenario, the maximum soil concentration of benzo(a)pyrene in Area 1 of 5.2 mg/kg results in a PM concentration protective of chemical exposure of 0.17 mg/m^3, which is higher than the residential PM level of 0.05 mg/m^3. This means that when PM concentrations are at or below 0.05 mg/m^3, the benzo(a)pyrene air concentrations are expected to be below the residential RSL of 0.00087 µg/m^3. The PM concentrations protective of human health for residential and industrial exposures are presented in **Tables I and II**.

In addition, the maximum soil concentration protective of the residential and industrial inhalation pathways at the respective PM concentration were calculated for each chemical using the following equation:

$$C_{soilPM} = [RSL \times (0.001\ mg/\mu g)]/[PM \times (10^{-6}\ kg/mg)]$$

Where C_{soilPM} is the maximum soil concentration protective of the inhalation pathway at the PM level (mg/kg); RSL is the residential or industrial RSL (mg/m^3); and PM is the residential or industrial PM level (0.05 or 5 mg/m^3, respectively). This soil concentration is the greatest level that would result in an air concentration for a chemical that is below its respective RSL when the PM concentration is at the respective PM level.

5.4.2 Equipment

A MIE Personal DataRAM (or equivalent) will be used for monitoring total dust and to assess the Site perimeter and worker action levels. The DataRAM is a portable real time particulate monitor with a concentration measurement range of 0.001 milligrams per cubic meter (mg/m^3) to 400 mg/m^3 at an accuracy of ±5%. This instrument has a particulate size range of maximum response of 0.1 to 10 microns. The calibration performed by the DataRAM manufacturer will be verified using a certified calibration bag at the beginning of each workday in accordance with the procedures specified by the manufacturer. Calibration logs will be maintained for each day.

A Noavalynx Model 110-WS-16 modular weather station (or equivalent) will be used to record wind speed, wind direction, temperature, relative humidity, and barometric pressure. The weather station can record wind speeds from 0 to 99.9 mph with an accuracy of ±3%. The weather station will be set up in a location near the soil remediation areas where interference from structures or trees will be minimal.

5.4.3 Measurement Frequency and Locations

Measurements will be taken throughout the workday as described in the following sections.

Site Perimeter

Dust level measurement frequency for Site perimeters will be every 15 minutes during work activities. The 15-minute time weighted average (TWA15) dust concentration will be recorded by the DataRAMs.

Measurement locations at Site perimeters will be based on prevailing wind direction with monitoring points established within 5 to 15 degrees of the measured upwind/downwind direction. Monitoring locations may be moved throughout the day based on wind direction. Perimeter monitoring locations include:

- One upwind location just inside the property boundary, and
- One downwind location just inside the property boundary.

Areas Occupied by Workers

Dust level measurement frequency for areas occupied by workers will be continuous. When the 5 mg/m^3 action level is detected in the work area, an audible alarm will sound. Readings will be then monitored for a 5-minute period to determine if the measurement above the action level is sustained. Similarly, if the 15 mg/m^3 action level is reached in the work area, an audible alarm will sound and then readings will be monitored for 5 minutes to determine if levels are sustained.

5.4.4 Mitigation Measures

If Site action levels are reached, the mitigation measures described below will be implemented.

Site Perimeter

If the difference in the TWA15 total dust readings between the upwind and downwind fence line locations is greater than 0.05 mg/m^3, excavation activities will be stopped and

dust suppression activities will be conducted until the TWA15 total dust readings are less than the action level.

Areas Occupied by Workers

If the total dust readings in the work areas are greater than 5 mg/m^3 sustained for more than five minutes, dust suppression activities will be conducted. If the readings are greater than 15 mg/m^3 sustained for greater than 5 minutes following dust suppression activities, the excavation activities will be stopped and workers will leave the work area (exclusion zone defined by the HASP), or workers shall don full-face air-purifying respirators supplied with HEPA cartridges, until dust levels are reduced. Specific personal protective equipment (PPE) is identified in the HASP.

5.4.5 Recordkeeping

The instruments will be calibrated at the beginning of each workday and the time and name of field personnel will be recorded. In addition, weather conditions at the Site will be recorded each day. Measurements will be documented for each reading at each designated monitoring location.

The following information will be recorded for each instrument reading:

- Date and time of reading,
- Reading location (e.g., upwind, downwind),
- Reading zone (e.g., upwind, downwind), and
- Concentration reading.

6.0 REFERENCES

1. Haley & Aldrich, Inc. 2005. *Additional Site Investigation Workplan, Cenco Refining Company*, 12345 Lakeland Road, Santa Fe Springs, California. Prepared for Isola & Bowers, LLP. May 9.

Table I. Estimation of PM Concentrations Protective of Chemical Exposures for Residential Exposure (Fenceline)

Chemical	Maximum Soil Concentration (mg/kg)				PM Concentration (mg/m^3)	Residential Air RSL ($\mu g/m^3$)[a]	PM Concentration Protective of Chemical Exposure (mg/m^3)[b]				Max Soil Concentration Protective of Residential Inhalation Pathway at PM Level (mg/kg)[c]
	Area 1	**Area 2**	**Area 3**	**Area 4**			**Area 1**	**Area 2**	**Area 3**	**Area 4**	
Benz(a)anthracene	7.2	11	7.4	1.03	0.05	8.70E-03	1.2	0.79	1.2	8.4	174
Benzo(a)pyrene	5.2	5.9	5.1	0.83	0.05	8.70E-04	0.17	0.15	0.17	1.0	17.4
Dibenz(ah)anthracene	0.53	0.57	3.5	0.62	0.05	8.00E-04	1.5	1.4	0.23	1.3	16.0
Arsenic	13.5	28.1	40.9	11.9	0.05	4.40E-04	**0.033**	**0.016**	**0.011**	**0.037**	8.8
Lead	4240	4690	47300	3810	0.05	1.50E-01	**0.035**	**0.032**	**0.0032**	**0.039**	3000

a Value for arsenic calculated based on Cal-EPA toxicity criteria; Value for lead is NAAQS of 0.15 $\mu g/m^3$.

b Values in bold are less than the PM dust level of 0.05 mg/m^3 indicating that the air concentration associated with the maximum soil concentration for the area may exceed the residential air RSL.
c The soil concentration that results in an air concentration less than the residential air RSL when the dust is at the PM dust level of 0.05 mg/m^3.

PM Concentration Protective of Chemical Exposure = (Residential Air RSL)/[(Maximum Soil Concentration) x (1E-6 mg/kg) x (1000 µg/mg)]
Max Soil Concentration Protective of Residential Inhalation Pathway at PM Level = [Residential Air RSL x (0.001 mg/µg)]/[PM Concentration x (1E-6 kg/mg)]

Table II. Estimation of PM Concentrations Protective of Chemical Exposures for Commercial/Industrial Exposure (on-site)

Chemical	Maximum Soil Concentration (mg/kg)				PM Concentration (mg/m^3)	Industrial Air RSL ($\mu g/m^3$)[a]	PM Concentration Protective of Chemical Exposure (mg/m^3)[b]				Max Soil Concentration Protective of Industrial Inhalation Pathway at PM Level (mg/kg)[c]
	Area 1	**Area 2**	**Area 3**	**Area 4**			**Area 1**	**Area 2**	**Area 3**	**Area 4**	
Benz(a)anthracene	7.2	11	7.4	1.03	5	1.10E-01	15	10	15	107	22.0
Benzo(a)pyrene	5.2	5.9	5.1	0.83	5	1.10E-02	**2.1**	**1.9**	**2.2**	13	2.2
Dibenz(ah)anthracene	0.53	0.57	3.5	0.62	5	1.00E-02	19	18	**2.9**	16	2.0
Arsenic	13.5	28.1	40.9	11.9	5	2.90E-03	**0.21**	**0.10**	**0.071**	**0.24**	0.58
Lead	4240	4690	47300	3810	5	1.50E-01	**0.035**	**0.032**	**0.0032**	**0.039**	30.0

a Value for arsenic calculated based on Cal-EPA toxicity criteria; Value for lead is NAAQS of 0.15 $\mu g/m^3$.

b Values in bold are less than the PM dust level of 5 mg/m^3 indicating that the air concentration associated with the maximum soil concentration for the area may exceed the industrial air RSL.
c The soil concentration that results in an air concentration less than the residential air RSL when the dust is at the nuisance dust level of 5 mg/m^3.

PM Concentration Protective of Chemical Exposure = (Industrial Air RSL)/[(Maximum Soil Concentration) x (1E-6 mg/kg) x (1000 µg/mg)]
Max Soil Concentration Protective of Industrial Inhalation Pathway at PM Level = [Industrial Air RSL x (0.001 mg/µg)]/[PM Concentration x (1E-6 kg/mg)]

Particulate Monitoring Form
Former Powerine Refinery
12345 Lakeland Road, Santa Fe Springs, California

Date: ______________________ **Recorded by:** ______________________

Time	Wind Direction/ Speed	Upwind		Downwind		Difference	
		Concentration (mg/m^3)	TWA (mg/m^3)	Concentration (mg/m^3)	TWA (mg/m^3)	Concentration (mg/m^3)	TWA (mg/m^3)

APPENDIX H

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 403

(Adopted May 7, 1976) (Amended November 6, 1992)
(Amended July 9, 1993) (Amended February 14, 1997)
(Amended December 11, 1998)(Amended April 2, 2004)
(Amended June 3, 2005)

RULE 403. FUGITIVE DUST

(a) Purpose

The purpose of this Rule is to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions.

(b) Applicability

The provisions of this Rule shall apply to any activity or man-made condition capable of generating fugitive dust.

(c) Definitions

(1) ACTIVE OPERATIONS means any source capable of generating fugitive dust, including, but not limited to, earth-moving activities, construction/demolition activities, disturbed surface area, or heavy- and light-duty vehicular movement.

(2) AGGREGATE-RELATED PLANTS are defined as facilities that produce and / or mix sand and gravel and crushed stone.

(3) AGRICULTURAL HANDBOOK means the region-specific guidance document that has been approved by the Governing Board or hereafter approved by the Executive Officer and the U.S. EPA. For the South Coast Air Basin, the Board-approved region-specific guidance document is the Rule 403 Agricultural Handbook dated December 1998. For the Coachella Valley, the Board-approved region-specific guidance document is the Rule 403 Coachella Valley Agricultural Handbook dated April 2, 2004.

(4) ANEMOMETERS are devices used to measure wind speed and direction in accordance with the performance standards, and maintenance and calibration criteria as contained in the most recent Rule 403 Implementation Handbook.

(5) BEST AVAILABLE CONTROL MEASURES means fugitive dust control actions that are set forth in Table 1 of this Rule.

(6) BULK MATERIAL is sand, gravel, soil, aggregate material less than two inches in length or diameter, and other organic or inorganic particulate matter.

(7) CEMENT MANUFACTURING FACILITY is any facility that has a cement kiln at the facility.

(8) CHEMICAL STABILIZERS are any non-toxic chemical dust suppressant which must not be used if prohibited for use by the Regional Water Quality Control Boards, the California Air Resources Board, the U.S. Environmental Protection Agency (U.S. EPA), or any applicable law, rule or regulation. The chemical stabilizers shall meet any specifications, criteria, or tests required by any federal, state, or local water agency. Unless otherwise indicated, the use of a non-toxic chemical stabilizer shall be of sufficient concentration and application frequency to maintain a stabilized surface.

(9) COMMERCIAL POULTRY RANCH means any building, structure, enclosure, or premises where more than 100 fowl are kept or maintained for the primary purpose of producing eggs or meat for sale or other distribution.

(10) CONFINED ANIMAL FACILITY means a source or group of sources of air pollution at an agricultural source for the raising of 3,360 or more fowl or 50 or more animals, including but not limited to, any structure, building, installation, farm, corral, coop, feed storage area, milking parlor, or system for the collection, storage, or distribution of solid and liquid manure; if domesticated animals, including horses, sheep, goats, swine, beef cattle, rabbits, chickens, turkeys, or ducks are corralled, penned, or otherwise caused to remain in restricted areas for commercial agricultural purposes and feeding is by means other than grazing.

(11) CONSTRUCTION/DEMOLITION ACTIVITIES means any on-site mechanical activities conducted in preparation of, or related to, the building, alteration, rehabilitation, demolition or improvement of property, including, but not limited to the following activities: grading, excavation, loading, crushing, cutting, planing, shaping or ground breaking.

(12) CONTRACTOR means any person who has a contractual arrangement to conduct an active operation for another person.

(13) DAIRY FARM is an operation on a property, or set of properties that are contiguous or separated only by a public right-of-way, that raises cows or

produces milk from cows for the purpose of making a profit or for a livelihood. Heifer and calf farms are dairy farms.

(14) DISTURBED SURFACE AREA means a portion of the earth's surface which has been physically moved, uncovered, destabilized, or otherwise modified from its undisturbed natural soil condition, thereby increasing the potential for emission of fugitive dust. This definition excludes those areas which have:

(A) been restored to a natural state, such that the vegetative ground cover and soil characteristics are similar to adjacent or nearby natural conditions;

(B) been paved or otherwise covered by a permanent structure; or

(C) sustained a vegetative ground cover of at least 70 percent of the native cover for a particular area for at least 30 days.

(15) DUST SUPPRESSANTS are water, hygroscopic materials, or non-toxic chemical stabilizers used as a treatment material to reduce fugitive dust emissions.

(16) EARTH-MOVING ACTIVITIES means the use of any equipment for any activity where soil is being moved or uncovered, and shall include, but not be limited to the following: grading, earth cutting and filling operations, loading or unloading of dirt or bulk materials, adding to or removing from open storage piles of bulk materials, landfill operations, weed abatement through disking, and soil mulching.

(17) DUST CONTROL SUPERVISOR means a person with the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule 403 requirements at an active operation.

(18) FUGITIVE DUST means any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly as a result of the activities of any person.

(19) HIGH WIND CONDITIONS means that instantaneous wind speeds exceed 25 miles per hour.

(20) INACTIVE DISTURBED SURFACE AREA means any disturbed surface area upon which active operations have not occurred or are not expected to occur for a period of 20 consecutive days.

(21) LARGE OPERATIONS means any active operations on property which contains 50 or more acres of disturbed surface area; or any earth-moving operation with a daily earth-moving or throughput volume of 3,850 cubic

meters (5,000 cubic yards) or more three times during the most recent 365-day period.

(22) OPEN STORAGE PILE is any accumulation of bulk material, which is not fully enclosed, covered or chemically stabilized, and which attains a height of three feet or more and a total surface area of 150 or more square feet.

(23) PARTICULATE MATTER means any material, except uncombined water, which exists in a finely divided form as a liquid or solid at standard conditions.

(24) PAVED ROAD means a public or private improved street, highway, alley, public way, or easement that is covered by typical roadway materials, but excluding access roadways that connect a facility with a public paved roadway and are not open to through traffic. Public paved roads are those open to public access and that are owned by any federal, state, county, municipal or any other governmental or quasi-governmental agencies. Private paved roads are any paved roads not defined as public.

(25) PM_{10} means particulate matter with an aerodynamic diameter smaller than or equal to 10 microns as measured by the applicable State and Federal reference test methods.

(26) PROPERTY LINE means the boundaries of an area in which either a person causing the emission or a person allowing the emission has the legal use or possession of the property. Where such property is divided into one or more sub-tenancies, the property line(s) shall refer to the boundaries dividing the areas of all sub-tenancies.

(27) RULE 403 IMPLEMENTATION HANDBOOK means a guidance document that has been approved by the Governing Board on April 2, 2004 or hereafter approved by the Executive Officer and the U.S. EPA.

(28) SERVICE ROADS are paved or unpaved roads that are used by one or more public agencies for inspection or maintenance of infrastructure and which are not typically used for construction-related activity.

(29) SIMULTANEOUS SAMPLING means the operation of two PM_{10} samplers in such a manner that one sampler is started within five minutes of the other, and each sampler is operated for a consecutive period which must be not less than 290 minutes and not more than 310 minutes.

(30) SOUTH COAST AIR BASIN means the non-desert portions of Los Angeles, Riverside, and San Bernardino counties and all of Orange

County as defined in California Code of Regulations, Title 17, Section 60104. The area is bounded on the west by the Pacific Ocean, on the north and east by the San Gabriel, San Bernardino, and San Jacinto Mountains, and on the south by the San Diego county line.

(31) STABILIZED SURFACE means any previously disturbed surface area or open storage pile which, through the application of dust suppressants, shows visual or other evidence of surface crusting and is resistant to wind-driven fugitive dust and is demonstrated to be stabilized. Stabilization can be demonstrated by one or more of the applicable test methods contained in the Rule 403 Implementation Handbook.

(32) TRACK-OUT means any bulk material that adheres to and agglomerates on the exterior surface of motor vehicles, haul trucks, and equipment (including tires) that have been released onto a paved road and can be removed by a vacuum sweeper or a broom sweeper under normal operating conditions.

(33) TYPICAL ROADWAY MATERIALS means concrete, asphaltic concrete, recycled asphalt, asphalt, or any other material of equivalent performance as determined by the Executive Officer, and the U.S. EPA.

(34) UNPAVED ROADS means any unsealed or unpaved roads, equipment paths, or travel ways that are not covered by typical roadway materials. Public unpaved roads are any unpaved roadway owned by federal, state, county, municipal or other governmental or quasi-governmental agencies. Private unpaved roads are all other unpaved roadways not defined as public.

(35) VISIBLE ROADWAY DUST means any sand, soil, dirt, or other solid particulate matter which is visible upon paved road surfaces and which can be removed by a vacuum sweeper or a broom sweeper under normal operating conditions.

(36) WIND-DRIVEN FUGITIVE DUST means visible emissions from any disturbed surface area which is generated by wind action alone.

(37) WIND GUST is the maximum instantaneous wind speed as measured by an anemometer.

(d) Requirements

(1) No person shall cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area such that:

(A) the dust remains visible in the atmosphere beyond the property line of the emission source; or

(B) the dust emission exceeds 20 percent opacity (as determined by the appropriate test method included in the Rule 403 Implementation Handbook), if the dust emission is the result of movement of a motorized vehicle.

(2) No person shall conduct active operations without utilizing the applicable best available control measures included in Table 1 of this Rule to minimize fugitive dust emissions from each fugitive dust source type within the active operation.

(3) No person shall cause or allow PM_{10} levels to exceed 50 micrograms per cubic meter when determined, by simultaneous sampling, as the difference between upwind and downwind samples collected on high-volume particulate matter samplers or other U.S. EPA-approved equivalent method for PM_{10} monitoring. If sampling is conducted, samplers shall be:

(A) Operated, maintained, and calibrated in accordance with 40 Code of Federal Regulations (CFR), Part 50, Appendix J, or appropriate U.S. EPA-published documents for U.S. EPA-approved equivalent method(s) for PM_{10}.

(B) Reasonably placed upwind and downwind of key activity areas and as close to the property line as feasible, such that other sources of fugitive dust between the sampler and the property line are minimized.

(4) No person shall allow track-out to extend 25 feet or more in cumulative length from the point of origin from an active operation. Notwithstanding the preceding, all track-out from an active operation shall be removed at the conclusion of each workday or evening shift.

(5) No person shall conduct an active operation with a disturbed surface area of five or more acres, or with a daily import or export of 100 cubic yards or more of bulk material without utilizing at least one of the measures listed in subparagraphs (d)(5)(A) through (d)(5)(E) at each vehicle egress from the site to a paved public road.

(A) Install a pad consisting of washed gravel (minimum-size: one inch) maintained in a clean condition to a depth of at least six inches and extending at least 30 feet wide and at least 50 feet long.

(B) Pave the surface extending at least 100 feet and at least 20 feet wide.

(C) Utilize a wheel shaker/wheel spreading device consisting of raised dividers (rails, pipe, or grates) at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.

(D) Install and utilize a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.

(E) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the actions specified in subparagraphs (d)(5)(A) through (d)(5)(D).

(6) Beginning January 1, 2006, any person who operates or authorizes the operation of a confined animal facility subject to this Rule shall implement the applicable conservation management practices specified in Table 4 of this Rule.

(e) Additional Requirements for Large Operations

(1) Any person who conducts or authorizes the conducting of a large operation subject to this Rule shall implement the applicable actions specified in Table 2 of this Rule at all times and shall implement the applicable actions specified in Table 3 of this Rule when the applicable performance standards can not be met through use of Table 2 actions; and shall:

(A) submit a fully executed Large Operation Notification (Form 403 N) to the Executive Officer within 7 days of qualifying as a large operation;

(B) include, as part of the notification, the name(s), address(es), and phone number(s) of the person(s) responsible for the submittal, and a description of the operation(s), including a map depicting the location of the site;

(C) maintain daily records to document the specific dust control actions taken, maintain such records for a period of not less than three years; and make such records available to the Executive Officer upon request;

(D) install and maintain project signage with project contact signage that meets the minimum standards of the Rule 403 Implementation Handbook, prior to initiating any earthmoving activities;

(E) identify a dust control supervisor that:

(i) is employed by or contracted with the property owner or developer;

(ii) is on the site or available on-site within 30 minutes during working hours;

(iii) has the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule requirements;

(iv) has completed the AQMD Fugitive Dust Control Class and has been issued a valid Certificate of Completion for the class; and

(F) notify the Executive Officer in writing within 30 days after the site no longer qualifies as a large operation as defined by paragraph (c)(18).

(2) Any Large Operation Notification submitted to the Executive Officer or AQMD-approved dust control plan shall be valid for a period of one year from the date of written acceptance by the Executive Officer. Any Large Operation Notification accepted pursuant to paragraph (e)(1), excluding those submitted by aggregate-related plants and cement manufacturing facilities must be resubmitted annually by the person who conducts or authorizes the conducting of a large operation, at least 30 days prior to the expiration date, or the submittal shall no longer be valid as of the expiration date. If all fugitive dust sources and corresponding control measures or special circumstances remain identical to those identified in the previously accepted submittal or in an AQMD-approved dust control plan, the resubmittal may be a simple statement of no-change (Form 403NC).

(f) Compliance Schedule

The newly amended provisions of this Rule shall become effective upon adoption. Pursuant to subdivision (e), any existing site that qualifies as a large operation will have 60 days from the date of Rule adoption to comply with the notification and recordkeeping requirements for large operations. Any Large Operation

Notification or AQMD-approved dust control plan which has been accepted prior to the date of adoption of these amendments shall remain in effect and the Large Operation Notification or AQMD-approved dust control plan annual resubmittal date shall be one year from adoption of this Rule amendment.

(g) Exemptions

(1) The provisions of this Rule shall not apply to:

(A) Dairy farms.

(B) Confined animal facilities provided that the combined disturbed surface area within one continuous property line is one acre or less.

(C) Agricultural vegetative crop operations provided that the combined disturbed surface area within one continuous property line and not separated by a paved public road is 10 acres or less.

(D) Agricultural vegetative crop operations within the South Coast Air Basin, whose combined disturbed surface area includes more than 10 acres provided that the person responsible for such operations:

(i) voluntarily implements the conservation management practices contained in the Rule 403 Agricultural Handbook;

(ii) completes and maintains the self-monitoring form documenting sufficient conservation management practices, as described in the Rule 403 Agricultural Handbook; and

(iii) makes the completed self-monitoring form available to the Executive Officer upon request.

(E) Agricultural vegetative crop operations outside the South Coast Air Basin whose combined disturbed surface area includes more than 10 acres provided that the person responsible for such operations:

(i) voluntarily implements the conservation management practices contained in the Rule 403 Coachella Valley Agricultural Handbook; and

(ii) completes and maintains the self-monitoring form documenting sufficient conservation management practices, as described in the Rule 403 Coachella Valley Agricultural Handbook; and

(iii) makes the completed self-monitoring form available to the Executive Officer upon request.

(F) Active operations conducted during emergency life-threatening situations, or in conjunction with any officially declared disaster or state of emergency.

(G) Active operations conducted by essential service utilities to provide electricity, natural gas, telephone, water and sewer during periods of service outages and emergency disruptions.

(H) Any contractor subsequent to the time the contract ends, provided that such contractor implemented the required control measures during the contractual period.

(I) Any grading contractor, for a phase of active operations, subsequent to the contractual completion of that phase of earth-moving activities, provided that the required control measures have been implemented during the entire phase of earth-moving activities, through and including five days after the final grading inspection.

(J) Weed abatement operations ordered by a county agricultural commissioner or any state, county, or municipal fire department, provided that:

(i) mowing, cutting or other similar process is used which maintains weed stubble at least three inches above the soil; and

(ii) any discing or similar operation which cuts into and disturbs the soil, where watering is used prior to initiation of these activities, and a determination is made by the agency issuing the weed abatement order that, due to fire hazard conditions, rocks, or other physical obstructions, it is not practical to meet the conditions specified in clause (g)(1)(H)(i). The provisions this clause shall not exempt the owner of any property from stabilizing, in accordance with paragraph (d)(2), disturbed surface areas which have been created as a result of the weed abatement actions.

(K) sandblasting operations.

(2) The provisions of paragraphs (d)(1) and (d)(3) shall not apply:

(A) When wind gusts exceed 25 miles per hour, provided that:

(i) The required Table 3 contingency measures in this Rule are implemented for each applicable fugitive dust source type, and;

(ii) records are maintained in accordance with subparagraph (e)(1)(C).

(B) To unpaved roads, provided such roads:

(i) are used solely for the maintenance of wind-generating equipment; or

(ii) are unpaved public alleys as defined in Rule 1186; or

(iii) are service roads that meet all of the following criteria:

(a) are less than 50 feet in width at all points along the road;

(b) are within 25 feet of the property line; and

(c) have a traffic volume less than 20 vehicle-trips per day.

(C) To any active operation, open storage pile, or disturbed surface area for which necessary fugitive dust preventive or mitigative actions are in conflict with the federal Endangered Species Act, as determined in writing by the State or federal agency responsible for making such determinations.

(3) The provisions of (d)(2) shall not apply to any aggregate-related plant or cement manufacturing facility that implements the applicable actions specified in Table 2 of this Rule at all times and shall implement the applicable actions specified in Table 3 of this Rule when the applicable performance standards of paragraphs (d)(1) and (d)(3) can not be met through use of Table 2 actions.

(4) The provisions of paragraphs (d)(1), (d)(2), and (d)(3) shall not apply to:

(A) Blasting operations which have been permitted by the California Division of Industrial Safety; and

(B) Motion picture, television, and video production activities when dust emissions are required for visual effects. In order to obtain this exemption, the Executive Officer must receive notification in writing at least 72 hours in advance of any such activity and no nuisance results from such activity.

(5) The provisions of paragraph (d)(3) shall not apply if the dust control actions, as specified in Table 2, are implemented on a routine basis for

each applicable fugitive dust source type. To qualify for this exemption, a person must maintain records in accordance with subparagraph (e)(1)(C).

(6) The provisions of paragraph (d)(4) shall not apply to earth coverings of public paved roadways where such coverings are approved by a local government agency for the protection of the roadway, and where such coverings are used as roadway crossings for haul vehicles provided that such roadway is closed to through traffic and visible roadway dust is removed within one day following the cessation of activities.

(7) The provisions of subdivision (e) shall not apply to:

(A) officially-designated public parks and recreational areas, including national parks, national monuments, national forests, state parks, state recreational areas, and county regional parks.

(B) any large operation which is required to submit a dust control plan to any city or county government which has adopted a District-approved dust control ordinance.

(C) any large operation subject to Rule 1158, which has an approved dust control plan pursuant to Rule 1158, provided that all sources of fugitive dust are included in the Rule 1158 plan.

(8) The provisions of subparagraph (e)(1)(A) through (e)(1)(C) shall not apply to any large operation with an AQMD-approved fugitive dust control plan provided that there is no change to the sources and controls as identified in the AQMD-approved fugitive dust control plan.

(h) Fees

Any person conducting active operations for which the Executive Officer conducts upwind/downwind monitoring for PM_{10} pursuant to paragraph (d)(3) shall be assessed applicable Ambient Air Analysis Fees pursuant to Rule 304.1. Applicable fees shall be waived for any facility which is exempted from paragraph (d)(3) or meets the requirements of paragraph (d)(3).

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Backfilling	01-1 Stabilize backfill material when not actively handling; and 01-2 Stabilize backfill material during handling; and 01-3 Stabilize soil at completion of activity.	✓ Mix backfill soil with water prior to moving ✓ Dedicate water truck or high capacity hose to backfilling equipment ✓ Empty loader bucket slowly so that no dust plumes are generated ✓ Minimize drop height from loader bucket
Clearing and grubbing	02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing; and 02-2 Stabilize soil during clearing and grubbing activities; and 02-3 Stabilize soil immediately after clearing and grubbing activities.	✓ Maintain live perennial vegetation where possible ✓ Apply water in sufficient quantity to prevent generation of dust plumes
Clearing forms	03-1 Use water spray to clear forms; or 03-2 Use sweeping and water spray to clear forms; or 03-3 Use vacuum system to clear forms.	✓ Use of high pressure air to clear forms may cause exceedance of Rule requirements
Crushing	04-1 Stabilize surface soils prior to operation of support equipment; and 04-2 Stabilize material after crushing.	✓ Follow permit conditions for crushing equipment ✓ Pre-water material prior to loading into crusher ✓ Monitor crusher emissions opacity ✓ Apply water to crushed material to prevent dust plumes

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Cut and fill	05-1 Pre-water soils prior to cut and fill activities; and 05-2 Stabilize soil during and after cut and fill activities.	✓ For large sites, pre-water with sprinklers or water trucks and allow time for penetration ✓ Use water trucks/pulls to water soils to depth of cut prior to subsequent cuts
Demolition – mechanical/manual	06-1 Stabilize wind erodible surfaces to reduce dust; and 06-2 Stabilize surface soil where support equipment and vehicles will operate; and 06-3 Stabilize loose soil and demolition debris; and 06-4 Comply with AQMD Rule 1403.	✓ Apply water in sufficient quantities to prevent the generation of visible dust plumes
Disturbed soil	07-1 Stabilize disturbed soil throughout the construction site; and 07-2 Stabilize disturbed soil between structures	✓ Limit vehicular traffic and disturbances on soils where possible ✓ If interior block walls are planned, install as early as possible ✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes
Earth-moving activities	08-1 Pre-apply water to depth of proposed cuts; and 08-2 Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction; and 08-3 Stabilize soils once earth-moving activities are complete.	✓ Grade each project phase separately, timed to coincide with construction phase ✓ Upwind fencing can prevent material movement on site ✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Importing/exporting of bulk materials	09-1 Stabilize material while loading to reduce fugitive dust emissions; and 09-2 Maintain at least six inches of freeboard on haul vehicles; and 09-3 Stabilize material while transporting to reduce fugitive dust emissions; and 09-4 Stabilize material while unloading to reduce fugitive dust emissions; and 09-5 Comply with Vehicle Code Section 23114.	✓ Use tarps or other suitable enclosures on haul trucks ✓ Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage ✓ Comply with track-out prevention/mitigation requirements ✓ Provide water while loading and unloading to reduce visible dust plumes
Landscaping	10-1 Stabilize soils, materials, slopes	✓ Apply water to materials to stabilize ✓ Maintain materials in a crusted condition ✓ Maintain effective cover over materials ✓ Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes ✓ Hydroseed prior to rain season
Road shoulder maintenance	11-1 Apply water to unpaved shoulders prior to clearing; and 11-2 Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.	✓ Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs ✓ Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Screening	12-1 Pre-water material prior to screening; and 12-2 Limit fugitive dust emissions to opacity and plume length standards; and 12-3 Stabilize material immediately after screening.	✓ Dedicate water truck or high capacity hose to screening operation ✓ Drop material through the screen slowly and minimize drop height ✓ Install wind barrier with a porosity of no more than 50% upwind of screen to the height of the drop point
Staging areas	13-1 Stabilize staging areas during use; and 13-2 Stabilize staging area soils at project completion.	✓ Limit size of staging area ✓ Limit vehicle speeds to 15 miles per hour ✓ Limit number and size of staging area entrances/exists
Stockpiles/ Bulk Material Handling	14-1 Stabilize stockpiled materials. 14-2 Stockpiles within 100 yards of off-site occupied buildings must not be greater than eight feet in height; or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.	✓ Add or remove material from the downwind portion of the storage pile ✓ Maintain storage piles to avoid steep sides or faces

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Traffic areas for construction activities	15-1 Stabilize all off-road traffic and parking areas; and 15-2 Stabilize all haul routes; and 15-3 Direct construction traffic over established haul routes.	✓ Apply gravel/paving to all haul routes as soon as possible to all future roadway areas ✓ Barriers can be used to ensure vehicles are only used on established parking areas/haul routes
Trenching	16-1 Stabilize surface soils where trencher or excavator and support equipment will operate; and 16-2 Stabilize soils at the completion of trenching activities.	✓ Pre-watering of soils prior to trenching is an effective preventive measure. For deep trenching activities, pre-trench to 18 inches soak soils via the pre-trench and resuming trenching ✓ Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment
Truck loading	17-1 Pre-water material prior to loading; and 17-2 Ensure that freeboard exceeds six inches (CVC 23114)	✓ Empty loader bucket such that no visible dust plumes are created ✓ Ensure that the loader bucket is close to the truck to minimize drop height while loading
Turf Overseeding	18-1 Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and 18-2 Cover haul vehicles prior to exiting the site.	✓ Haul waste material immediately off-site

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure		Guidance
Unpaved roads/parking lots	19-1	Stabilize soils to meet the applicable performance standards; and	✓ Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements
	19-2	Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	
Vacant land	20-1	In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees or other effective control measures.	

Table 2
DUST CONTROL MEASURES FOR LARGE OPERATIONS

FUGITIVE DUST SOURCE CATEGORY	CONTROL ACTIONS	
Earth-moving (except construction cutting and filling areas, and mining operations)	(1a)	Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations each subsequent four-hour period of active operations; OR
	(1a-1)	For any earth-moving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.
Earth-moving: Construction fill areas:	(1b)	Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. For areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method 1557 or other equivalent method approved by the Executive Officer and the California Air Resources Board and the U.S. EPA, complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four-hour period of active operations.

Table 2 (Continued)

FUGITIVE DUST SOURCE CATEGORY	CONTROL ACTIONS	
Earth-moving: Construction cut areas and mining operations:	(1c)	Conduct watering as necessary to prevent visible emissions from extending more than 100 feet beyond the active cut or mining area unless the area is inaccessible to watering vehicles due to slope conditions or other safety factors.
Disturbed surface areas (except completed grading areas)	(2a/b)	Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind driven fugitive dust must have an application of water at least twice per day to at least 80 percent of the unstabilized area.
Disturbed surface areas: Completed grading areas	(2c)	Apply chemical stabilizers within five working days of grading completion; OR
	(2d)	Take actions (3a) or (3c) specified for inactive disturbed surface areas.
Inactive disturbed surface areas	(3a)	Apply water to at least 80 percent of all inactive disturbed surface areas on a daily basis when there is evidence of wind driven fugitive dust, excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions; OR
	(3b)	Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR
	(3c)	Establish a vegetative ground cover within 21 days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; OR
	(3d)	Utilize any combination of control actions (3a), (3b), and (3c) such that, in total, these actions apply to all inactive disturbed surface areas.

Table 2 (Continued)

FUGITIVE DUST SOURCE CATEGORY	CONTROL ACTIONS	
Unpaved Roads	(4a)	Water all roads used for any vehicular traffic at least once per every two hours of active operations [3 times per normal 8 hour work day]; OR
	(4b)	Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour; OR
	(4c)	Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface.
Open storage piles	(5a)	Apply chemical stabilizers; OR
	(5b)	Apply water to at least 80 percent of the surface area of all open storage piles on a daily basis when there is evidence of wind driven fugitive dust; OR
	(5c)	Install temporary coverings; OR
	(5d)	Install a three-sided enclosure with walls with no more than 50 percent porosity which extend, at a minimum, to the top of the pile. This option may only be used at aggregate-related plants or at cement manufacturing facilities.
All Categories	(6a)	Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 2 may be used.

TABLE 3
CONTINGENCY CONTROL MEASURES FOR LARGE OPERATIONS

FUGITIVE DUST SOURCE CATEGORY	CONTROL MEASURES
Earth-moving	(1A) Cease all active operations; OR (2A) Apply water to soil not more than 15 minutes prior to moving such soil.
Disturbed surface areas	(0B) On the last day of active operations prior to a weekend, holiday, or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; OR (1B) Apply chemical stabilizers prior to wind event; OR (2B) Apply water to all unstabilized disturbed areas 3 times per day. If there is any evidence of wind driven fugitive dust, watering frequency is increased to a minimum of four times per day; OR (3B) Take the actions specified in Table 2, Item (3c); OR (4B) Utilize any combination of control actions (1B), (2B), and (3B) such that, in total, these actions apply to all disturbed surface areas.
Unpaved roads	(1C) Apply chemical stabilizers prior to wind event; OR (2C) Apply water twice per hour during active operation; OR (3C) Stop all vehicular traffic.
Open storage piles	(1D) Apply water twice per hour; OR (2D) Install temporary coverings.
Paved road track-out	(1E) Cover all haul vehicles; OR (2E) Comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.
All Categories	(1F) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 3 may be used.

Table 4
(Conservation Management Practices for Confined Animal Facilities)

SOURCE CATEGORY	CONSERVATION MANAGEMENT PRACTICES
Manure Handling **(Only applicable to Commercial Poultry Ranches)**	(1a) Cover manure prior to removing material off-site; AND (1b) Spread the manure before 11:00 AM and when wind conditions are less than 25 miles per hour; AND (1c) Utilize coning and drying manure management by removing manure at laying hen houses at least twice per year and maintain a base of no less than 6 inches of dry manure after clean out; or in lieu of complying with conservation management practice (1c), comply with conservation management practice (1d). (1d) Utilize frequent manure removal by removing the manure from laying hen houses at least every seven days and immediately thin bed dry the material.
Feedstock Handling	(2a) Utilize a sock or boot on the feed truck auger when filling feed storage bins.
Disturbed Surfaces	(3a) Maintain at least 70 percent vegetative cover on vacant portions of the facility; OR (3b) Utilize conservation tillage practices to manage the amount, orientation and distribution of crop and other plant residues on the soil surface year-round, while growing crops (if applicable) in narrow slots or tilled strips; OR (3c) Apply dust suppressants in sufficient concentrations and frequencies to maintain a stabilized surface.
Unpaved Roads	(4a) Restrict access to private unpaved roads either through signage or physical access restrictions and control vehicular speeds to no more than 15 miles per hour through worker notifications, signage, or any other necessary means; OR (4b) Cover frequently traveled unpaved roads with low silt content material (i.e., asphalt, concrete, recycled road base, or gravel to a minimum depth of four inches); OR (4c) Treat unpaved roads with water, mulch, chemical dust suppressants or other cover to maintain a stabilized surface.
Equipment Parking Areas	(5a) Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR (5b) Apply material with low silt content (i.e., asphalt, concrete, recycled road base, or gravel to a depth of four inches).

APPENDIX I

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1166

(Adopted August 5, 1988)(Amended July 14, 1995)(Amended May 11, 2001)

RULE 1166. VOLATILE ORGANIC COMPOUND EMISSIONS FROM DECONTAMINATION OF SOIL

(a) Applicability

This rule sets requirements to control the emission of Volatile Organic Compounds (VOC) from excavating, grading, handling and treating VOC-contaminated soil as a result of leakage from storage or transfer operations, accidental spillage, or other deposition.

(b) Definitions

(1) EXCAVATION is the process of digging out and removing materials, including any material necessary to that process such as the digging out and removal of asphalt or concrete necessary to expose, dig out and remove known VOC contaminated soil.

(2) GRADING is the process of leveling off to produce a smooth surface including the removal of any material necessary to that process such as asphalt and concrete necessary to expose known VOC contaminated soil.

(3) SOIL DECONTAMINATION MEASURE is any process approved by the Executive Officer to remediate, destroy, remove, or encapsulate VOC and VOC-contaminated soil.

(4) UNDERGROUND STORAGE TANK means any one or combination of tanks, including pipes connected thereto, which is used for the storage of organic liquid which is more than 50% beneath the surface of the ground.

(5) VOC CONTAMINATED SOIL is a soil which registers a concentration of 50 ppm or greater of Volatile Organic Compounds as measured before suppression materials have been applied and at a distance of no more than three inches from the surface of the excavated soil with an organic vapor analyzer calibrated with hexane.

(6) VOC CONTAMINATED SOIL MITIGATION PLAN is a plan to minimize VOC emissions to the atmosphere during excavation and any subsequent handling of VOC-contaminated soil.

(7) VOLATILE ORGANIC COMPOUND (VOC) is any volatile compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds. Exempt compounds are defined in Rule 102—Definition Of Terms.

(8) VOLATILE ORGANIC MATERIALS include gasoline, diesel, crude oil, lubricant, waste oil, adhesive, paint, stain, solvent, resin, monomer, and/or any other material containing VOC.

(c) Requirements

(1) A person excavating an underground storage tank and/or transfer piping storing or previously storing VOC materials, or excavating or grading soil containing VOC materials shall:

(A) Apply for, obtain and operate pursuant to a mitigation plan approved by the Executive Officer prior to commencement of excavation or handling. The mitigation plan general requirement and application requirements are found in Attachment A to this rule. A copy of the approved plan must be on site during the entire excavation period.

(B) Notify the Executive Officer at least 24 hours prior to excavation using a form approved by the Executive Officer which is fully completed.

If the excavation does not commence on start date, renotification is required.

An alternative notification procedure may be authorized for multiple excavations within a single facility, with prior written approval from the Executive Officer.

(C) Monitor for VOC contamination pursuant to subdivision (e), at least once every 15 minutes commencing at the beginning of excavation or grading and record all VOC concentration readings in a format approved by the Executive Officer; and

(D) When VOC-contaminated soil is detected during excavation or grading:

(i) Implement the approved mitigation plan (Attachment A).

(ii) Notify the Executive Officer within 24 hours of detection of VOC-contaminated soil.

(iii) Monitor and record VOC concentration readings as prescribed in the plan. Monitoring records must be kept available on site.

(iv) Keep calibration records for all monitoring instruments available on site.

(2) A person handling VOC-contaminated soil at or from an excavation or grading site shall:

(A) Segregate VOC-contaminated stockpiles from non-VOC contaminated stockpiles such that mixing of the stockpiles does not take place.

(B) Spray VOC-contaminated soil stockpiles with water and/or approved vapor suppressant and cover them with plastic sheeting for all periods of inactivity lasting more than one hour.

(C) Conduct a daily visual inspection of all covered VOC contaminated soil stockpiles to ensure the integrity of the plastic covered surfaces. A daily inspection record must be maintained on site.

(D) Comply with the provisions in subparagraph (c) (1)(A) and clause (c)(1)(D)(i).

(E) Maintain a record of the identification and business addresses of the generator, transporter and storage/treatment facilities. Such record shall be signed by each party at the time custody is transferred.

(F) Treat or remove contaminated soil from an excavation or grading site within 30 days from the time of excavation.

(3) If the VOC concentration in the excavated soil is measured at greater than 1000 ppm, spray the soil with water or vapor suppressant and:

(A) As soon as possible, but not more than 15 minutes, place the soil in sealed containers, or

(B) As soon as possible, but not more than 15 minutes, load into trucks, moisten with additional water, cover and transport off site, or

(C) Implement other alternative storage methods approved in writing by the Executive Officer.

(4) A person treating VOC-contaminated soil shall:

(A) Obtain a permit to construct and operate treatment equipment, as applicable, from the Executive Officer, and

(B) Implement VOC-contaminated soil decontamination measures, as approved by the Executive Officer in writing, which result in Best Available Control Technology applied during all segments, and which include, but are not limited to, at least one of the following:

(i) Installation and operation of an underground VOC collection system and a disposal system prior to excavation.

(ii) Collection and disposal of the VOC from the excavated soil on-site using equipment approved by the Executive Officer.

(iii) Any equivalent VOC-contaminated soil control measure previously approved in writing by the Executive Officer.

(5) A person shall not engage in or allow any on-site or off-site spreading, grading or screening of VOC-contaminated soil, which results in uncontrolled evaporation of VOC to the atmosphere.

(6) Loading trucks for contaminated soil must meet the following:

(A) The truck and trailer shall be adequately tarped prior to leaving the site; no excavated materials shall extend above the sides or rear of the truck or trailer to prevent soil spillage during transport, and

(B) The exterior of the truck, trailer and tires shall be cleaned off prior to the truck leaving the site.

(d) Exemptions

(1) The provisions of this rule shall not apply to the following:

(A) Excavation, handling, and treating of less than one (1) cubic yard of contaminated soil.

(B) Removal of soil for sampling purposes.

(C) Accidental spillage of five (5) gallons or less of VOC containing material.

(2) The provisions of paragraphs (c)(1) and (c)(2) shall not apply to soil excavation or handling as a result of an emergency as declared by an authorized health officer, agricultural commissioner, fire protection officer, or other authorized agency officer. Whenever possible, the Executive Officer shall be notified by telephone prior to commencing such excavation. The Executive Officer shall be notified in writing no later than 48 hours following such excavation. Written notification shall include written emergency declaration from the authorized officer.

(e) Test Methods

(1) A person shall measure excavated soils for volatile organic compounds to determine contamination by:

(A) Using an organic vapor analyzer calibrated with hexane, complying with 40 CFR Part 60 Appendix A, EPA Reference Method 21 Section 3 or any equivalent method with prior approval in writing by the Executive Officer. If other calibrating gases are used, then the measured readings shall be correlated to and expressed as hexane.

(B) Placing the probe inlet at a distance of no more than three inches from the surface of the excavated soil and while slowly moving the probe across the soil surface, observe the instrument readout. If an increased meter reading is observed, continue to sample the excavated soil until the maximum meter reading is obtained. Leave the probe inlet at this maximum reading location for approximately double the instrument response time. If the maximum observed meter reading is greater than the 50 ppm standard in the regulation, record and report the results.

(2) The presence of VOC in stored or spillage materials shall be determined by SCAQMD Method 313 [Determination of Presence of Volatile Organic Compounds (VOC) in Headspace] and/or Method 304 (Determination of Volatile Organic Compounds in Various Materials) contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual.

(f) Enforcement

(1) Violation of any provision of this rule or the violation of the approved mitigation plan shall be grounds for the Executive Officer to amend or revoke the mitigation plan, in addition to penalties provided by the Health & Safety Code.

(2) If the owner or operator is served with a Notice of Violation for creating a public nuisance, the owner or operator shall suspend operation until the public nuisance is mitigated to the satisfaction of the Executive Officer.

ATTACHMENT A
GENERAL MITIGATION PLANS REQUIREMENTS

VOC Contaminated Soil Mitigation Plans shall be written to minimize VOC emissions to the atmosphere during excavation, grading, handling and treatment of VOC contaminated soil. VOC Contaminated Soil Mitigation Plans shall consist of three types: Various Locations, Site Specific and Facility Treatment.

(1) General Requirements

(A) A plan is not transferable.

(B) A person responsible for the excavation, grading or handling of VOC contaminated soil must be completely familiar with the plan and must adhere to the plan requirement. The Executive Officer may require that the plan be signed by the owner and/or operator.

(C) A plan may be amended upon renewal.

(D) Permission to excavate, grade or handle VOC contaminated soil may be withdrawn by the District upon a finding by the Executive Officer that the excavation, grading or handling of the VOC contaminated soil is causing a public nuisance or violating other AQMD rules or regulations.

(2) Various Location Plans:

(A) Shall be limited to the excavation of 2000 cubic yards or less of VOC contaminated soil in any consecutive 12 month period at the same site.

(B) Shall not be used in conjunction with any other various location plan at the same site within a consecutive 12-month period.

(C) Shall expire after one year from issuance unless renewed.

(D) Shall not be issued for nor used for operations that involve grading, soil treatment or remediation, or landfills.

(3) Site Specific Plans:

(A) Shall be for excavation of greater than 2000 cubic yards of VOC contaminated soil.

(B) Shall be issued for specific excavation or grading locations for a period not to exceed two years.

(C) Shall not be renewable.

(4) Facility Treatment Plans:

(A) Shall be issued for a treatment facility at a permanent location.

(B) Shall expire after one year from issuance unless renewed.

(5) Applications for Site Specific Plans shall contain as a minimum:

(A) Reasons for excavation or grading.

(B) Cause of VOC soil contamination and history of the site.

(C) Description of tanks or piping associated with the soil contamination.

(D) An estimate of the amount of contaminated soil.

(E) The operating schedule for excavation and removal.

(F) Description of how the excavation or grading will be conducted.

(G) Description of mitigation measures for dust, odors and VOC.

(H) Details of disposal of VOC contaminated soil, including the ultimate receptor.

(I) Description of monitoring equipment and techniques.

(J) A map showing the facility layout, property line, and surrounding area up to 2500 feet away, and including any schools, residential areas or other sensitive receptors such as hospitals or locations where children or elderly people live or work.

(K) Designation of a person who can conduct a site inspection with the Executive Officer prior to issuance of the plan.

(6) Applications for Facility Treatment Plans shall at a minimum:

(A) Include a list of all AQMD permits to construct or operate which have been issued for that treatment and control equipment.

(B) Provide for the implementation of VOC-contaminated soil decontamination measures, as approved by the Executive Officer in writing, which result in Best Available Control Technology during all operations.

(C) Provide a map showing the facility layout including the location of all proposed VOC and non-VOC contaminated soil stockpiles.

(D) Specify the total amount of VOC contaminated soil proposed to be stockpiled on site.

(E) Provide for VOC contaminated soil stockpiles to be kept moist with water or suppressant and be covered to prevent fugitive emissions.

(F) Provide for VOC contaminated soil stockpiles to be segregated from non-VOC contaminated soil stockpiles.

(G) Provide for maintenance of records for stockpiles according to the source name, address and dates of reception.

(H) Provide for records of the generator, transporter and storage/treatment facilities and indicate their identification and business addresses. Such records shall be signed by each party at the time custody is transferred.

(I) Provide a map showing the facility layout, property line, and surrounding area up to 2500 feet away, and including any schools, residential area or other sensitive receptors such as hospitals, or locations where children or elderly people live or work.

(J) Designation of a person who can conduct a site inspection with the Executive Officer prior to issuance of the plan.

(K) Specify the operating schedule and maximum amount of VOC-contaminated soil proposed to be remediated on a daily basis.

(7) In approving a plan, the Executive Officer require reasonable conditions deemed necessary to ensure the operations comply with the plan and AQMD rules. The conditions may include, but shall not be limited to, procedures for ensuring responsibility for the implementation of the plan, accessibility to the site for AQMD staff, notification of actions required by the plan, identification of emission receptors, monitoring and testing, suppression and covering of stockpiles, prevention of public nuisance from VOC or dust emissions, prevention of fugitive emissions of VOC contaminated soil, loading of truck trailers, and disposal and treatment.

(8) In approving a plan, the Executive Officer may require any records deemed necessary to be maintained by the operator to demonstrate compliance with the plan. Such records shall be retained for at least 2 years and be made available to the Executive officer upon request.